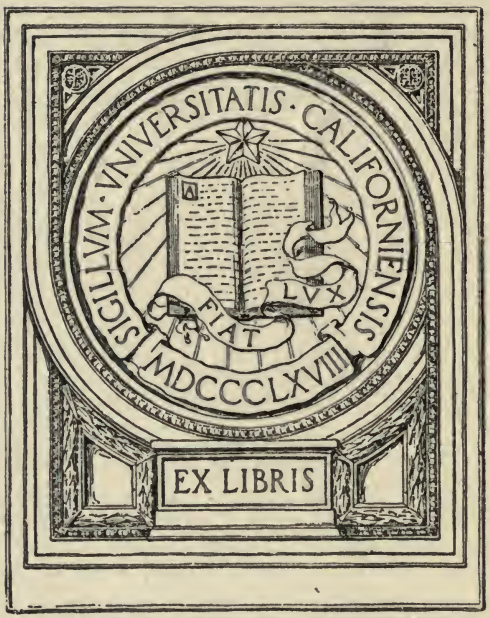
TRAINING FOR THE TRENCHES

A PRACTICAL HANDBOOK

BY

CAPTAIN · LESLIE · VICKERS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TRAINING FOR THE TRENCHES

LESLIE VICKERS

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BRITISH "TANK" IN ACTION

TRAINING FOR THE TRENCHES

A PRACTICAL HANDBOOK

BASED UPON PERSONAL EXPERIENCE
DURING THE FIRST TWO YEARS
OF THE WAR IN FRANCE

BY

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UNIV. OF
CALIFORNIA

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TO

LIEUT. GORDON ALFORD

OF THE "ANZACS,"

A VERY GALLANT SOLDIER, A BOYHOOD FRIEND,
WHO MADE THE GREAT SACRIFICE ON THE SOMME,
AUGUST, NINETEEN-SIXTEEN

366706

INTRODUCTION

SINCE the Great European War broke out, printing presses have been busy producing text books, handbooks and guides for soldiers. Military authorities and civilians alike have come to realise that this war has changed many of our old conceptions of strategy and that it has introduced conditions that are entirely unprecedented. New methods have had to be devised—sometimes on the field itself in the midst of the greatest difficulties—for meeting new and novel methods of warfare. Every deadly engine of destruction has called forth some new invention to cope with it. Soldiers have had to live and fight under conditions that to the lay mind, or to the mind of the military men of a few years ago, would seem to be impossible. It is reasonable to assume that the inventive genius of the world will be turned more and more in the direction of the problem of how to construct still more terrible machines of destruction. The next

war, if there be one, is not likely to be any less fearful than the present, so that the soldier who is called upon to engage in it will require to know the lessons that have been learned in this war. The author hopes that from a fairly long training in England in preparation for work in France, and from some months in the trenches on the Western British front, he may be able to offer suggestions that will be of value to men who are training themselves with a view to becoming efficient soldiers. He sends this little book forth, not as a treatise on war, nor yet as a scientific handbook. He merely desires it to serve to bring home lessons that are sometimes too dearly bought. "Experientia docet" is the proverb that we used to write in our copy books, and he will feel that he is repaid if, from his experience, others are enabled to learn. While he trusts that there will be many veteran soldiers and instructors who will be glad to have this information in convenient form, he intends this little book primarily for the use of those who are civilians in the process of becoming soldiers.

L. V.

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TRAINING FOR THE TRENCHES

CHAPTER I

THE CIVILIAN AND THE SOLDIER

THE change from civilian to soldier is one that is not easily accomplished. We soon find that there are many new conditions to be faced, many new and uncongenial tasks to be undertaken, and all sorts of strange and novel regulations to which we must render the strictest obedience. In civilian life we become thoroughly independent. We come and go more or less as we please. We do not usually ask the permission of any one if we wish to depart a little from our customary habits. Not since we left school have we answered to roll-calls to any considerable extent, and only in the summertime, "for the fun of it," have we done our own housekeeping and submitted to domestic duties. In civilian life we have been allowed to work out our own salvation,

and if we have been part of a machine at all it has been a huge social machine in which we did not figure as a cog but rather as an attachment.

In military life things are all changed. We become at once cogs in the great machine. We have a definite work to perform. The smooth running of the plant depends on *us*. We lose much of our independence. We realise that other cogs depend on us, and, further, that there are many bigger cogs who drive us and whose bigness and authority we must thoroughly appreciate and recognise. In my own experience, after some years of being my own master to the degree that only the professional man understands, I found it much to my dislike to be obliged to get permission before I could leave the camp grounds for half an hour. A sentry with a fixed bayonet helped me a little in the appreciation of my new circumstances, and when in a few days' time I was the sentry myself, it did me the world of good and took the edge off my displeasure. Again it is not to the liking of the ordinary man to be told that he must rise at a certain hour, and much less is it to his liking to be told that he must be in bed at a certain hour after which talking is considered a misdemeanour and is pun-

ishable. *But* a few weeks of enforced early rising makes one give thanks for the pure fresh air of the small hours of the day; and a few days of hard physical exertion in the process of training makes a man glad to conform to the rule of early to bed, and gives him reason to class as a nuisance the man who talks after "Lights Out" and thus prevents him from sleeping.

In civilian life, too, a man usually chooses with scrupulous care his roommate or mates. In the army one may be placed in a tent or a billet with men who are by no means congenial, unless he is lucky enough to have been able to join a group of companions who form a unit. But even the experience of having uncongenial companions is not altogether without its compensations; for every civilian finds that he has need of rearranging his estimates of men when he enters the army. The sooner our own corners are rubbed off the better, and many of them are inevitably rubbed off when we are ten or thirteen in a tent!

The quality that is the salvation of the volunteer is his keenness. We volunteer *because* we are keen and we would be ashamed to be otherwise. The rules and regulations of army life are liable to try our tempers and our patience.

There may come times when we question very seriously the wisdom of having "joined up." There may be occasions when we thoroughly despise our seniors and conclude that everything military was arranged for our oppression. Bit by bit we shall lose the conviction that we "know it all" already, and as knowledge increases within us, we shall appreciate more and more the knowledge and experience of those placed over us. Regulations and even red tape will be seen to have a wise purpose, though, to the end of our days, we may long for some official scissors to cut it.

The change from civilian to soldier is produced in one way only—THE LEARNING OF OBEDIENCE. This is the first and last lesson. The civilian is only obedient in certain ways and to a limited extent. The soldier is obedient in every way and to any extent, even to death. It would be wrong of me to indicate that "the habit of implicit obedience" comes easily to the average man. It is difficult to acquire. But it is the "sine qua non" of a good soldier and *must* be acquired. It is the heart of the system. Obedience is given to some one by every rank in the army, from the highest general to the humblest private.

When we have learned obedience we need to

learn discipline—for the two words do not mean exactly the same thing. Discipline may be of two kinds. First of all there is SELF-DISCIPLINE. This includes the restraint of selfishness; the cultivation of the spirit of comradeship, generosity and thoughtfulness; the cultivation of habits of moderation in smoking, drinking, etc.; and the elimination of those vices that tend to rob us of our strength or impair the clearness of our thinking. Then there is, secondly, ARMY DISCIPLINE, which includes obedience, thoroughness, common sense and resourcefulness. This question is dealt with at length in military handbooks and needs few words from me.

The point to remember is that training for modern war is a serious business, not to be entered upon lightly, nor regarded as a "cinch." A man must first of all be fit in body to be able to withstand the many physical hardships that he will be sure to encounter. Then he must be fit in mind to provide him with the imagination and the resourcefulness that he will certainly be called on to show. His heart must be strong not only in the opinion of the surgeon but in the opinion of those who judge his "all-round manhood." He must be trained in such a way that he will be able to stand not only the

physical but the nervous strain as well. A visit to the hospitals in England and France will provide the spectacle of row after row of beds containing men who have never been wounded but whose nerves have gone to pieces in the strain of modern warfare.

Remember to take your training seriously—it pays.

CHAPTER II

HEALTH

BENJAMIN FRANKLIN once said, "Be sober and temperate and you will be healthy." This is in the main true and is excellent advice for the soldier. But there are ills that are liable to affect the fighting man in spite of his temperance and sobriety and of these we must speak.

The health of men in the army is, on the average, much better than that of individuals outside of it. This is due to many causes chief of which is the fact that only healthy men are admitted to the army. Then the out-of-door life, regular and wholesome food, sufficient exercise and "early to bed and early to rise" tend to keep him well. If he enters the army fit, he must make it his business to remain fit and it will be well to remember that "an ounce of prevention is worth a pound of cure." To preserve good health is his DUTY for only thus can he become an efficient soldier. If the bodily resistance is weakened, man becomes prey to the mil-

lions of germs that are to be found in the air and even within his own system. When he is healthy the body is able to keep them in subjection, but once let him permit his system to run down and these armies of microbes will attack him with all their forces.

Now let us begin first of all with Bodily Cleanliness. No soldier can come on parade unless his face and hands be clean. Shaving, though sometimes a bore, is an excellent method of keeping the face clean and fresh. It tends to smarten a man, and officers are not slow to pick out the careful from the slovenly soldier. We used to reserve the unpleasant tasks of the camp—latrine duties amongst others—for men who would not keep their hands and faces clean. But there are other parts of the body to which it is just as necessary to apply cleansing methods regularly even though no military punishment follows the violation of the rule. First of these that I would mention is the

Teeth. Soldiers, I find, are very careless in this matter till the first thing you know is that someone is absent from parade because of the toothache. On one occasion in the trenches, when we were very short handed, an officer had to leave us for a week to go to the hospital with a badly abscessed tooth due entirely to neglect.

Cleaning the teeth night and morning freshens the mouth and makes food taste better. An excellent custom is to rinse the mouth after every meal, and while this may often be inconvenient it can be done if a soldier remembers to wash his mouth out with the first sip of water every time he takes a drink. If the teeth are allowed to get very bad a man's digestion suffers and he falls ill. This robs the army of part of its fighting strength, a result which every soldier has an interest in avoiding.

Hair. No better advice can be given to the soldier on this subject than "cut it short." The shorter the better, for when it is short it is easy to keep clean both from body dirt and vermin. In this war soldiers have almost invariably had the clippers run completely over their heads. Soap and water are as good for the head as for any other part of the body.

Trunk. It is not always possible for soldiers to get a shower or plunge every day, but a small sponge carried as part of the equipment will help a good deal. In France, where the water was scarce, we had to make it go a long way. When the enemy permitted, I used to get my regular morning bath with the aid of the sponge and about a saucerful of water. I felt like a canary during the process and wanted to chirp

and flap my wings. Soldiers should be encouraged to go in swimming whenever circumstances permit. To go in swimming was not a military order in my regiment, but we used to take the men to the sea and then ask who wanted to go in. About eighty per cent of the men would volunteer. Then we would tell off the remaining twenty per cent for vigorous physical exercises and after ten minutes give them the choice of continuing or taking a plunge in the sea. They all went in! Men's objections to water usually come from habit and they soon learn to appreciate its refreshing power.

Feet. "An army marches on its stomach"—metaphorically, but it marches on its feet, literally, as every poor infantryman knows. And it has to do a good deal of marching in war and in preparation for war. "Route Marches" and "Hikes" are very popular with the training staff as the soldier will find, and they are usually planned by the men who ride horses! So important did we consider the care of the feet that we used to have "Toe Parades" twice a week with the Doctor in attendance. Men with neglected feet were considered as candidates for cookhouse garbage duty, and were promptly assigned to this task. In the first place feet must be comparatively clean—soap and water

recommended! Then they should be free from corns. This is not so easy to accomplish. Paring with a knife helps, but if they get too bad the doctor or the chiropodist should be consulted. Another frequent source of trouble is neglected toe-nails. The best way is to cut them straight across, not too far down, but so as to keep them from tearing the sock or cramping the foot in the boot. Blisters sometimes arise on the feet. They should be treated at once, mainly by removing the cause—which may be in the boot itself or the sock—and then by bathing them in a solution of boric acid. If the socks are kept oiled, or even if small pieces of soap are put into the boots, this condition will, in large measure, be avoided. I have seen many a pitiful case of men trailing along the road well in rear of their company, limping and hobbling as best they could, all due to the fact that they had not paid the attention to their feet that they must if the feet are to do the work for which the army calls.

A few minutes attention per day given to these points will, I am confident, help to procure and maintain health for the soldier. But all his care will be wasted unless that which he takes *inside* his body is wholesome—food and drink. In camps the soldier usually has all his

food cooked for him, and it is the duty of his officers to see that it is good in quality, sufficient in quantity, and reasonably well cooked. As the soldier does the serving himself, that is entirely his own lookout. In the trenches it is not possible to have things arranged as one has in camp. The regimental cookers were usually stationed about three miles from the firing line —for their safety—and all the food was cooked there and sent up to the lines in boxes or sandbags, and apportioned to the various platoons according to the number of men on the strength. Three times a week the cooks were given fresh meat to prepare for us—when the Government says it is fresh it is fresh even in Summer time and when the flies have been busy—and for the other days we subsisted on canned meats or "bully beef" as it was called. The meat was either baked or boiled, though sometimes we got a stew—in camp we got too many stews! Potatoes were boiled, usually in their jackets. This food we could heat in the trenches in our individual cooking apparatus, which also served to cook our ration of bacon for breakfast, while in the upper part of the tin we made tea.

Of course in the trenches we had to eat whatever we could get, but our lot was relieved considerably by the arrival of delicacies from Eng-

land by the parcel post. This sometimes subjected us to the temptation that we were under while in training, and that was to eat pastry and suchlike food, which, while very appetising, is not to be recommended as a diet for the soldier.

On the question of DRINK my views have become very pronounced since my experience with the army. Undoubtedly the best universal drink for the soldier is tea—preferably weak. I should say water were it always possible to get water that is pure. But during a campaign pure water is a luxury. By making the water into tea you make sure that it gets boiled, and by the addition of tea you get a beverage that has not the insipid sickly flavour of boiled or sterilised water. Coffee is preferred by Americans, I know, but there are dangers to be recognised especially by those whose hearts are inclined to be weak.

With regard to alcohol I would most heartily recommend total abstinence. I need scarcely remind American readers that there is not a single front rank baseball manager that allows his men to indulge in alcohol. From my own experience I could tell of many men who were permanently rendered unfit as soldiers through foolish indulgence. Of the men who were brought before the Colonel for more or less seri-

ous crimes, 90 per cent of them owed their humiliation directly to alcohol, and 5 per cent of them to alcohol indirectly. I know that it is possible for some men to take alcohol in moderation. Not many continue to do so, and sooner or later there is almost certain to be an overindulgence. In the British army men were sentenced to the extreme penalty—death—for being intoxicated while on active service in France. I say without hesitation that the best men I had were the abstainers and the worst men I had were the drinkers. Alcohol weakens the tissues of the body, it lowers its vitality and makes it an easy victim to disease, and worse still, it rapidly obscures the mind. For a war of the kind that is being waged in Europe a man needs to have his head very clear, and this he cannot do if he is the victim of the alcohol habit.

Many total abstainers from alcohol are tempted to take "gassy" drinks, fizzes and so forth. These tend to shorten the wind and should therefore be avoided.

If plain water has to be drunk, care should be taken to see that it is reasonably pure, and all vessels such as water bottles should be thoroughly rinsed each time before using.

When these simple rules of eating and drinking are followed many of the dangers incidental

to army life will be avoided, and physical fitness established.

A kindred subject is that of Smoking. This habit has become so universal in the British army that it is almost true to say that every one smokes. From my own experience I have seen very few ill effects from it except in cases of obvious overindulgence. But undoubtedly it is easy to overdo the cigarette business, and on this point I would utter a word of warning. Pipes are to be preferred, though I admit it is difficult to get men to smoke anything else than cigarettes in the trenches. In the monotony and strain of trench life, and from the need to do something to keep the stench of decaying bodies from the nostrils, men do smoke to excess. There is some excuse there, but during training at home every man must endeavour to be reasonable in his indulgence.

Clothing. I have found that men are very apt to load themselves up with all sorts of useless items of apparel. In their endeavour to keep warm they have often badly overdone it with the result that they have found themselves perspiring and exhausted in the midst of an important piece of physical labour. Of course the soldier will need to see to it that his underclothes are sufficiently warm to keep out the

extreme cold, but it is better to *add* something to the clothing from time to time—such as a Cardigan waistcoat—than to be equipped permanently with the heaviest kind of underclothes. Above all, avoid those garments that are being offered extensively to unsuspecting men, and which, while they will undoubtedly keep you warm, will also prevent the proper perspiration of the body. The body *must* be allowed to perspire and the air must be allowed to carry off the perspiration. Woollens are the best for this purpose, and though the initial cost of them is rather great, they are worth it in the long run.

Boots. In the paragraph on feet I couldn't help mentioning the matter of boots, but it is so important that, at the risk of too great repetition, I want to mention it again. You must have boots that are right, otherwise you will soon be lamed and thus be out of action. And every man out of action "counts two on a division." We found it advisable in France to get boots that were large enough to accommodate the feet and *two* pairs of socks—one thin and one thick pair. Into the boots we poured a small quantity of oil, or between the socks we put small pieces of soap to keep the feet in good condition. You will find that the feet must be

oiled if they are to stand the work of a campaign.

But sometimes injuries are caused to the feet by other parts of the clothing of a soldier. Men frequently laced their puttees or leggins too tight and found that they suffered pains in the feet—the circulation was being stopped. This rendered them very liable to frostbite, than which there is nothing more painful. If there are signs of freezing, remove the boots as soon as possible and restore the circulation. But if the feet are actually frozen the soldier is in for a long and tedious illness, and will be lucky if he does not need to have his feet amputated. I am told that, during the first campaign in the Carpathians, the Central Powers lost 25,000 men per day with frozen feet.

Before leaving this subject to deal with diseases and their avoidance, I would like to say a word or two on the congenial subject of REST. A soldier should get as much of it as he can, consistent, of course, with doing his duty. Never stand when you could as well be lying down. Throw yourself on the ground whenever you can, to rest, and let the whole body relax. When you are given a rest on the roadside, stretch out on your back and breathe as deeply as you can. Give your mind and body alike a

vacation and you will feel the benefit of it at the end of the day. Don't spend your hours of beauty sleep in talking—get that done during the day. Your body will call for rest after the tiring duties of the day and you should give it all the rest you can.

CHAPTER III

DISEASE

IF the rules of health set forth in the foregoing chapter are carefully observed, the soldier will be doing the best he can to keep his body fit. He will be building up a reserve of strength that will stand him in good stead should the germs of disease find entrance into his body. But there are times when, in spite of all our precautions, these little microbes get the upper hand, and a long struggle against them begins. The disease that has been responsible for the death of armies of soldiers is Enteric or Typhoid fever. During the campaign in South Africa the British lost more men through the ravages of this disease than through bullets and shells. But during the present war there have been comparatively few cases of enteric, and the number that have proved fatal is very small. For this result we have to thank the medical profession that has given so much study and care to the perfection of a method of combating this disease. The

secret has been found to lie in the inoculation of the soldier with small doses of the disease itself till he becomes comparatively immune to it. Inoculation was not made compulsory in the first armies that were raised in England after war broke out, but it was made compulsory for men who desired to become members of the British Expeditionary Force in France. Most men gladly accepted this medical boon and subjected themselves to this simple and painless operation. But there were others who objected, sometimes through fear of the pain, and sometimes through what they termed "conscientious objections." Anti-Inoculation Societies got busy and spread their wretched literature throughout the camps and made men thoroughly afraid, both of the operation and of its results. To meet this the War Office issued through the papers and by pamphlets, information from the medical authorities as to the wonderful results that had already been achieved. They were able to prove beyond all dispute, that of the men who caught the infection in France, practically all of those who had been inoculated recovered —their cases being light—while those who had not been inoculated became easy victims to the disease. As the war has progressed these figures have been amplified till now there can be

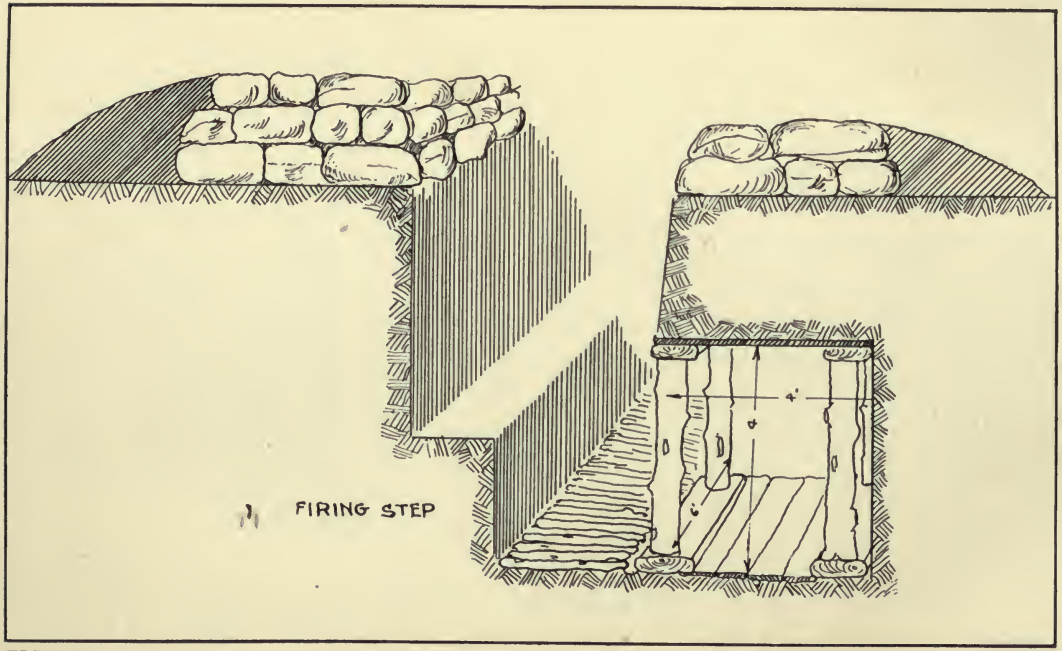

FIGURE 9:
Finished trench showing parapet and parados; firing step of earth; flooring; and shelter dug-out under parados.

no question that the use of "Inoculation" has made this dread disease a thing to be feared less than the measles.

Officers adopted different methods in counteracting the teaching of those who tried to keep the soldiers from submitting. Some of them argued with the men and told them of the wonderful results that had been achieved. Others warned their men that they would be left behind when the battalion went to France. For my own part I adopted the method of sending for the medical men whose business it was to administer the "dose." When they were all prepared I marched in my men from some light fatigue work in which they had been engaged, told them to take off their coats and roll up their sleeves, and three at a time they appeared before the waiting surgeons. The business was over in no time. I marched them off to a place where I could talk to them and then acquainted them with the advantages of inoculation. The announcement of forty-eight hours' freedom from drill for the whole company to let their arms limber up put the few that were disgruntled into good spirits again, and I was able to report to the O. C. that 100 per cent of my men were willing to be inoculated—and had been inoculated! So little did any of them

suffer from its effects that they readily lined up in ten days time when they were to receive the second dose. At intervals of two or three months in France the operation was repeated and I never had a single man on the sick list from enteric!

Now, while inoculation is excellent and should be insisted on in all armies, both for the sake of the individual soldier and of those who associate with him, every possible precaution should be taken by the soldier even after this has been done. All water for drinking should be looked upon with suspicion. Never take any chances for the sake of getting a hasty drink. Many communities have water supplies that are admirable and when military operations are carried on there, the difficulties disappear. On the other hand many places have the most abominable water supply systems. Where we were in France, the country was very flat, and consequently the drainage poor. The buildings that housed the human beings and the cattle and pigs on the farms were as a rule all built around a "midden" into which flowed all the refuse. In many cases the family water supply, a well, was dug within three feet of this cesspool, so that the drainage from the latter was almost sure to reach the former. This is "asking for"

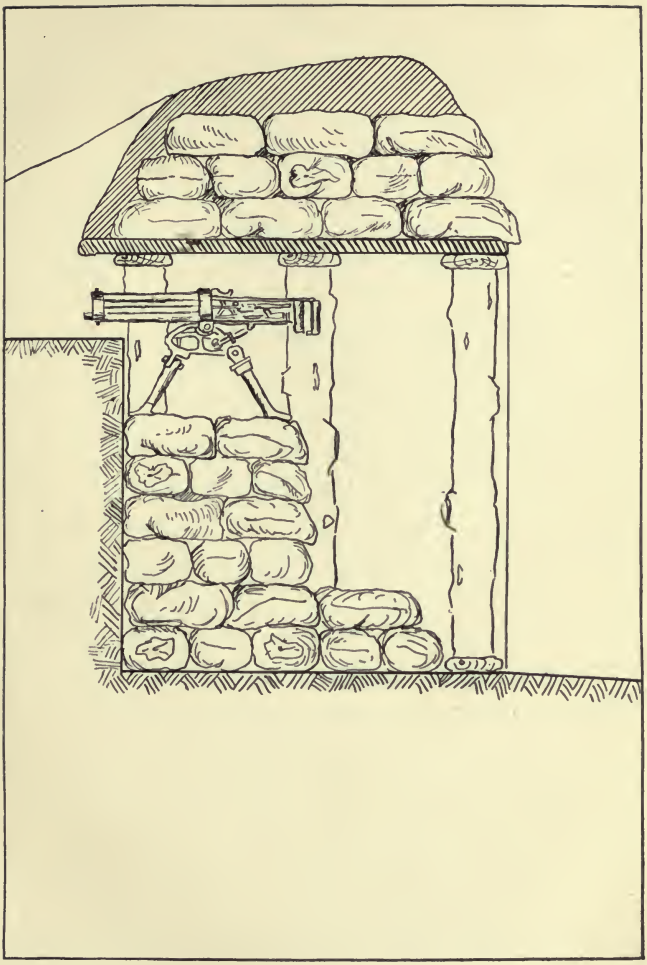

FIGURE 10:
Machine gun position with heavy overhead cover.

enteric, and some men fell victims to it before they could be made to realise the danger. The best rule to follow, as we all soon learned, was to get our drinking water exclusively from the army water wagons, for there the water had been treated and the danger lessened. At times we could not get to the water carts and a certain degree of risk had to be run.

Not only with water has the greatest care to be taken, but also with food. Flies are notorious carriers of disease, and consequently soldiers must see to it that no food is left uncovered. Nor should food ever be placed near latrines or any place where there is decaying matter.

With universal inoculation, and with a careful following of these simple rules laid down, the ancient scourge of the army loses much of its terror. The task of combating it lies mainly with the medical and sanitary staff, though the common soldier must also play his part of carefulness. Some men carried small sterilisers with them. This practice is not to be recommended for it is very difficult to keep these little utensils clean, and then they themselves become harmful. Tabloid sterilisers I have found to be effective in an emergency.

Those who have followed the history of the

war will remember how the Serbian Army was threatened with extinction through the deadly disease called TYPHUS. There is no doubt that the army and most of the civil population would have been wiped out had it not been for the timely assistance that that brave little nation received from medical men and women throughout the world, notably America. Many of these brave souls made the final great sacrifice in their endeavour to stamp out this disease. Then again its horrors have been more recently brought to our notice through the revelations of the conditions at Wittenberg Camp in Germany. The story that Captain Vidal and Major Priestly, Officers of the Royal Army Medical Corps, had to tell of their living death in that awful internment camp, brought home to the British people and then to the world, the frightfulness of that disease, as well as the inhumanity of certain German medical officials. Fortunately, typhus has been little known in Western Europe, and it is possible that soldiers in this country will never know its ravages. But all the same it is as well to be prepared for it, and to know the methods of preventing its outbreak. It is a disease that is carried by flees and lice and consequently the most that can be said in a work of this kind is to recommend the greatest

pains in the removal of these creatures from the body should they ever take up their residence there. I refer the reader to the chapter on "Vermin" for methods of combating "Lice."

Dysentery, Enteritis, and Colitis. These names are applied to various kinds and grades of stomach troubles, between which it is difficult for the common soldier to differentiate, and which show themselves with most distressing effects. They come, usually, from drinking bad water or eating bad food. Even with the greatest care that the Commissariat could take, there were occasions when food unfit for human consumption was served to the troops. In the trenches it was not to be wondered at that we were stricken with these diseases, for the flies that infested the trenches and lived on the dead bodies there, favoured us with many visits at food time and poisoned the latter for us. There is no way that I know of to prevent it, and the sufferer will be well advised to report to the medical officer for skilled treatment. Cases of dysentery were not very frequent in France, but they were in Gallipoli where the food supply left much to be desired.

Tetanus is a disease that is brought about by infection which enters the system through a

wound. In the early part of the war it occurred only too frequently till, in this case also, the skill of the medical profession provided us with a serum to combat it. The universal practice now is to inoculate with anti-tetanic serum just as soon as possible after a wound has been received. By this means tetanus, like enteric, is rapidly ceasing to be regarded as a menace.

I have no intention of exhausting the whole category of diseases to which man—and therefore the soldier—is heir, but simply to touch upon those that are most likely to occur in a campaign. The foregoing list includes, I believe, all the most likely, but to them I should like to add these two—SMALLPOX and CHOLERA. To deal first with smallpox, we can say, fortunately, that it is rare. This is due in large part to the almost universal provision of vaccination, which should be insisted upon in an army. Cholera is of rare occurrence, and nothing can be done to ward it off except to follow carefully the ordinary rules of health and sanitation. Should it, unfortunately, break out, the army must place itself unreservedly in the hands of medical authorities who are especially qualified to deal with it.

There is one other disease that has made its effects felt on almost every army, and which it

has been found impossible to thoroughly eliminate. The hands of those who would lessen its influence are to a great extent tied, because in the past, the only method that has been permissible to eliminate venereal disease has been what I shall call "the Moral method"—the appeal to morality and the intelligence of the individual soldier. We have used this excellent and praiseworthy method for generations, but it has never been found capable of eradicating the evil. Some other means, from an army point of view, has obviously to be resorted to. But even to discuss the matter, one runs the risk of being ruled out of court by those who will admit none but the aforementioned "moral argument."

When the first Expeditionary Force went to France, the late Lord Kitchener, then Secretary of State for War, issued an appeal to the men, in which he besought them to be on their guard against two of the evils that lessen the efficiency of soldiers—wine and women. The men who fell victims to wine or whiskey or other forms of alcoholic intemperance, were punished, first of all with imprisonment, and then, when it was seen that this penalty did not meet the case, the death penalty was imposed for such as became intoxicated when at their post of duty. Ob-

viously the army cannot afford to have as its guardians men who cannot keep sober. Those who fell victims to loose women and contracted venereal diseases—and it is beyond a doubt that most of the women who follow an army are diseased—had to be withdrawn from their positions and sent back to the bases to hospitals. Every man, therefore, who violated Lord Kitchener's advice, was playing into the hands of the enemy to this extent that he was taking the risk of contracting a disease which would rob the army of his services. My own Colonel used not to mince words on this subject but used to say that such men might just as well go over to the enemy at once. But with every kind of pleading and threat on the part of officers, it was found that there were men who disregarded their advice. A soldier's pay automatically stops under these circumstances, and at first it was the custom to acquaint his family with the fact that he had been sent to such and such a hospital, and the people of England soon got to know the purpose of these hospitals, and many a home suffered shame from the indiscretions of the men who represented them in France. When the Australian troops were quartered near Cairo—than which there are few more immoral cities in the world—venereal cases were fre-

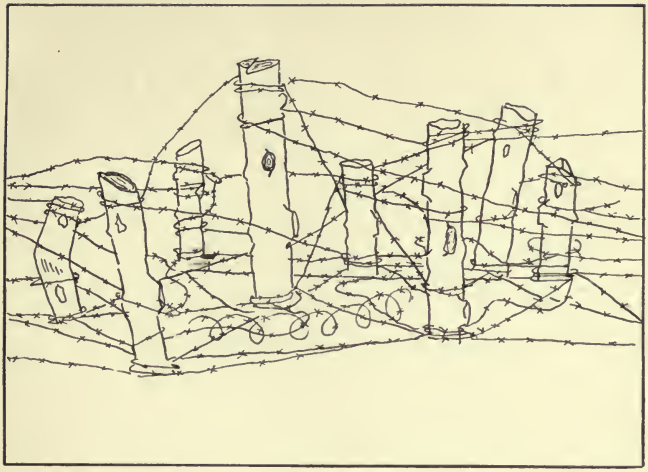

FIGURE 11:
Simple entanglements made of barbed wire and rough posts.

quent, in spite of the admonitions of the combatant officers and of the medical staff. What was to be done? Every effort was made to restrain the men and keep them out of the notorious red light district, but case after case of the disease turned up. Eventually some of the medical men hit upon the scheme of establishing at the entrance to the various camps, tents to which men could go on their return from the city. In those tents there was a representative of the Army Medical Corps equipped with all the latest appliances in the form of prophylactics, and these were administered without charge and without question, even as to name, to all who sought this method of protecting themselves after acts of indiscretion. The result was very gratifying from the medical standpoint, for the number of those who contracted the disease rapidly declined and the efficiency of the army was maintained at a correspondingly high standard. Of course a protest was immediately entered by those who were particularly interested in the morals of the men, and the charge was made that it was putting a premium on immorality. For my own part, interested in both of these matters, I have come to the conclusion that the old methods have failed, and that I would rather have an army immoral

and well than an army immoral and diseased. As human nature is constituted at present I can see no alternative, though I believe it to be our bounden duty to continue to urge the need of self-restraint. I do not fear that these words will be taken to cast a slur upon any army, for those of us who are not blind are perfectly aware that the same kind of immorality exists among civilian populations as in armies. For those men who shall read these words of mine I would with all the force at my command urge the close following of the precepts of Lord Kitchener.

A kindred problem with which the authorities sometimes have to deal is that of "unnatural men." Records of the German Army before the war contained many examples of this most revolting form of perversion. In the British Armies that were raised at the outbreak of the war, several cases occurred, the offenders being punished with terms of imprisonment varying from seven to fifteen years with hard labour—much too lenient.

The whole problem is most difficult to deal with, and any one who attempts to deal with it risks public censure. Yet the problem must be faced, nevertheless, and the sooner we apply sane methods to its solution, the better. Of

course views will differ as to what constitutes sane methods, but I am convinced from my own experience with soldiers that the method outlined above is a good one. We must not, however, fail to emphasise the dangers that men run. They must be taught the folly of it. We must make it plain to them that it is not worth the candle to run the risk of contracting the most horrible diseases that even our advanced medical science can never cure with certainty, for the sake of a brief gratification. A man's whole life may be ruined; his innocent children afflicted with a loathsome disease; his wife made to endure years of physical and mental torment as the price of that foolish act. Were this book a moral treatise I should spend time in driving this point home with more force. But as the object I desire to achieve is to show men how they can become soldiers and remain fit, it must suffice to say again that the surest way to lay up misery for yourself, to render yourself unfit to remain at your soldier tasks and thus increase the odds of the enemy against your side is to run the risk of venereal disease through contact with women.

CHAPTER IV

VERMIN

I FEEL that no hints on health would be complete without some brief reference to the "terrors of the trenches"—Lice. A learned Professor of one of the Universities of England published a little book whose exact title I have forgotten but which was something like this—"Flees, Lice and Bugs, or, the Little Brothers of the Prussian." That is pretty hard on the enemy—or the lice—but it serves to emphasise one important point and that is, that the ravages of these vermin is so great that they can well be said to be fighting the same cause as the enemy. In spite of all a soldier can do, lice are sure, sooner or later, to overtake him. They make their nests in the straw upon which he throws himself when fatigued, or in the walls of houses, or on other human beings, and contact is almost sure to bring them. They are most interesting little pets whose sole interest in life seems to be to lay eggs and thus make sure that their race shall be perpetuated. The

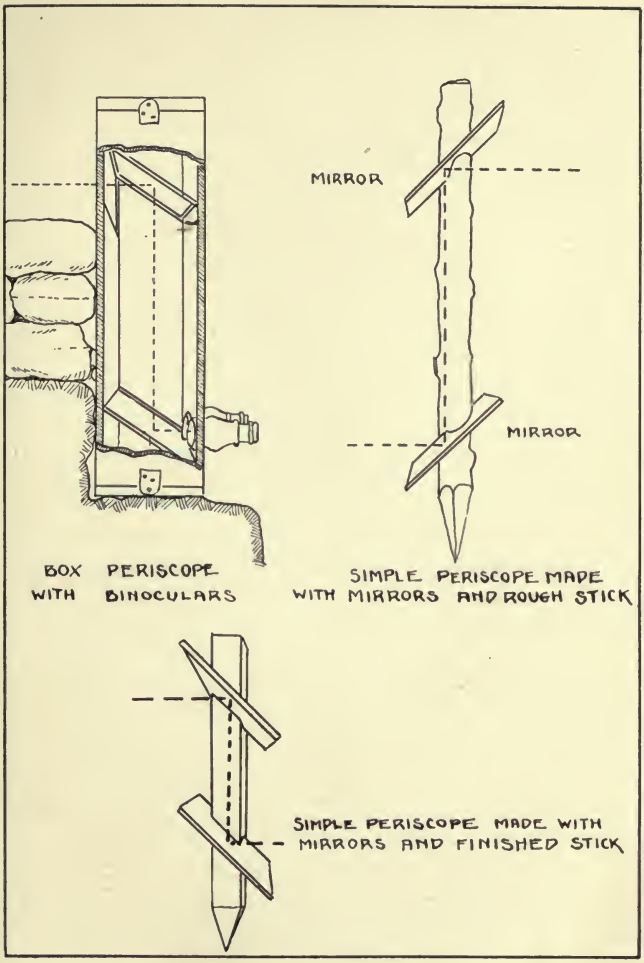

FIGURE 12:
Trench periscopes.

female louse takes up her abode upon the soldier's body and immediately sets herself to an egg laying competition. If she gets five minutes start of her victim she lays up for him weeks of trouble, and the only thing to do is to go after her and her eggs as soon as her presence is made known. I discovered my first louse while I was at luncheon in the trenches. I seized the spot on my arm where I believed her to be, and calling to my orderly hurried off to the fields some distance behind the lines. There we began the hunt which ended, I am happy to be able to say, in her decease. But the eggs had been laid and not for weeks did I succeed in ridding myself of these unwelcome boarders. I was, much against my will, used as a perambulating incubator, and only the greatest vigilance served to rid me of the pests.

It was our custom, as soon as we were relieved from the trenches for a spell of a few days, to turn all the men out into a field and bid them "Hunt!" I used then to walk around amongst the men and enquire of them what luck they had had. "Two," "Seven," "Nineteen," etc., were the frequent replies. One of the saddest men I have ever seen replied "None, Sir." His unhappiness was due to the fact that he was perfectly well aware that there were

some there to be caught, but that he had not yet had the luck to get them.

As to means of combating them, the best is constant vigilance. Make sure that not only the live lice are killed but that the eggs as well are destroyed, say with the ash of a lighted cigarette. The next thing to remember is that body lice are opposed to cleanliness, and that the oftener you can wash yourself, the more you inconvenience them. Gasoline squirted over the body and the clothes also serves to discourage them. Some thin cotton shirts covered with a solution of carbolic, had a good effect, and at the least they served as another barrier to the little rascals before they could reach the body.

Since I returned to this country, a manufacturer of vermin killers told me that the following method will be found effective: Take a goose quill and seal up one end. Put in half an inch of mercury, and then seal the other end making a little phial of about an inch and a half in length. Sew this to the clothes under each armpit and round the belt line. As to whether this will work I do not know, for I am glad to be able to say that I have not needed to test the theory since I returned to America.

Fleas are not so common, but when they oc-

cur, they must be hunted with the same vigilance as lice, and the same methods apply to their extermination. As carriers of typhus, they are particularly to be dreaded.

CHAPTER V

HEALTH AND OFFICERS

SO far I have been dealing with disease from the point of view of the individual and I have said nothing of the duties of officers towards their men in this respect. A word on the subject may not be out of place.

When the new armies were formed in England at the outbreak of war it was summer time and the new troops were placed in tents in open fields. The lessons of camp life were difficult for many of these men to learn, and some of the experience that was obtained was bought dearly. It will occur to every soldier that the greatest care must be paid to the cleanliness of the lines. Men are often too lazy to carry their scraps to the proper garbage pails, and carelessly throw them around in the neighbourhood of the tents. In fine weather they can be easily seen and the culprits, when discovered, can be made to clean up all the lines. When the culprits cannot be discovered, whole companies have to be put to this fatigue work. In wet

weather it is worse, for the particles of meat and bread get trodden into the ground and before long there arises a stench from them. Sometimes, too, rats and mice are encouraged by this careless method. We used to find that certain men who had an inherent objection to fresh air, would eat all their meals within the tents. This practice must be stopped at all costs. Bring the men into the open and let them stay there and they will be all the better for it. It is excusable for them to remain in the tents during rain but at no other time. The inspecting officer would frequently find pieces of bacon and butter and cheese trodden into the ground on which the men had to sleep.

The lines *must* be kept clean. Officers will be well advised to assign liberal fatigue work to the men who are guilty of messing up the lines, and littering them with particles of food, papers, cigarette and cigar ends, etc. The regular sanitary squad cannot be expected to do its work unless the soldiers themselves are made to co-operate. It is a good thing to encourage the spirit of rivalry between units, and men can often be jollied on into keeping their lines neat and tidy by pointing out to them lines that are better kept—and sometimes praising them when their lines are up to the required standard. We

found that a good many of the men had quite an artistic instinct, and would use up the old bottles and stones from around the camp to execute the most beautiful designs representing the battalion colours or the flags of the allied nations.

We also met with considerable difficulty in getting men to thoroughly air the tents. The flaps of round tents should be rolled up just as early as is possible each morning. A good plan is to "strike" individual rows of tents occasionally and give the ground a thorough airing and disinfecting. We followed this plan with tents which contained notoriously lazy men who would not rise at the proper time and developed the habit of leaving the flaps of the tents down. They were awakened by the Orderly Corporal in the usual course of events and given ten minutes in which to appear outside their tents. Promptly at the expiration of this time a squad arrived on the scene and, undoing all their guy ropes, let the tents down very suddenly on their heads. It is very provoking to have a mass of canvas come about your ears in this way, and the slackers soon learned the only way to avoid it.

When an army has to live in tents, a certain amount of dampness is almost certainly inevi-

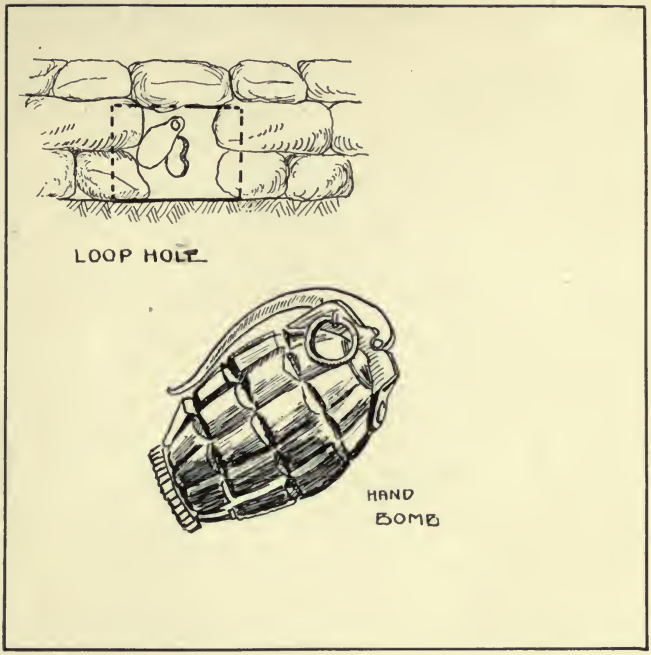

FIGURE 13:
Simple loophole made of steel plate and let into parapet.

FIGURE 14:
Ordinary hand bomb with fuse lighted automatically as lever is released.

table. But if proper drains are dug around them, and every advantage taken of the sunlight, much can be done to avoid what frequently ends in rheumatism or pneumonia. It pays to construct good cinder roads in all the camp lines and to see to it that the approaches to the individual tents are prepared in the same way. When we were first dumped down in a field of clay in the Midlands of England and told to prepare it for the horse lines to accommodate the sixteen hundred horses that were due in a few days, we were faced with a colossal task. We were all turned into navvies, and long before we even had shelter for the horses they had arrived. It was a most tedious business to construct lines for them in December in England, and we had to cart many hundreds of tons of cinders and rock to make the place possible. For weeks we worked at it, and there were complaints from the men that they had not joined the army to be navvies. They had joined it to fight, so they said. But when the stables were finished and they could approach the lines over nice smooth dry roads they realised that their labour had not been in vain. There is usually a fitting return in health from all the labour invested in the preparation of a good camp.

Another place in which officers and non-commissioned officers must be on the alert for filth, is the cook house. This is true in winter as well as in summer time. It has been my experience that the laziest and dirtiest men volunteer for the task of cook. The reason is that they are able to get the choicest portions for themselves, be free from the bore of attending drills and parades, and get a little higher pay, besides what they can get from the soldiers on the side for little favours. In an army such as was formed in England at the beginning of the war it was impossible to get enough trained cooks for the work, and all sorts of men were run in for the job. Many of them were thoroughly lazy and incompetent. There was, of course, a rooted objection to calling in the aid of women —though few of us ever think of employing men to do our cooking in private life—and when we suggested it for the purpose of improving the grade of our food in the Officers' Mess, we were met with the reply that it had never been done. That was the reason for keeping out a good many reforms in Dear Old England. But by strategy on our part, and by the eventual demands of the stomachs concerned that some change be made, we were able to introduce a woman manager for the mess kitchen. She re-

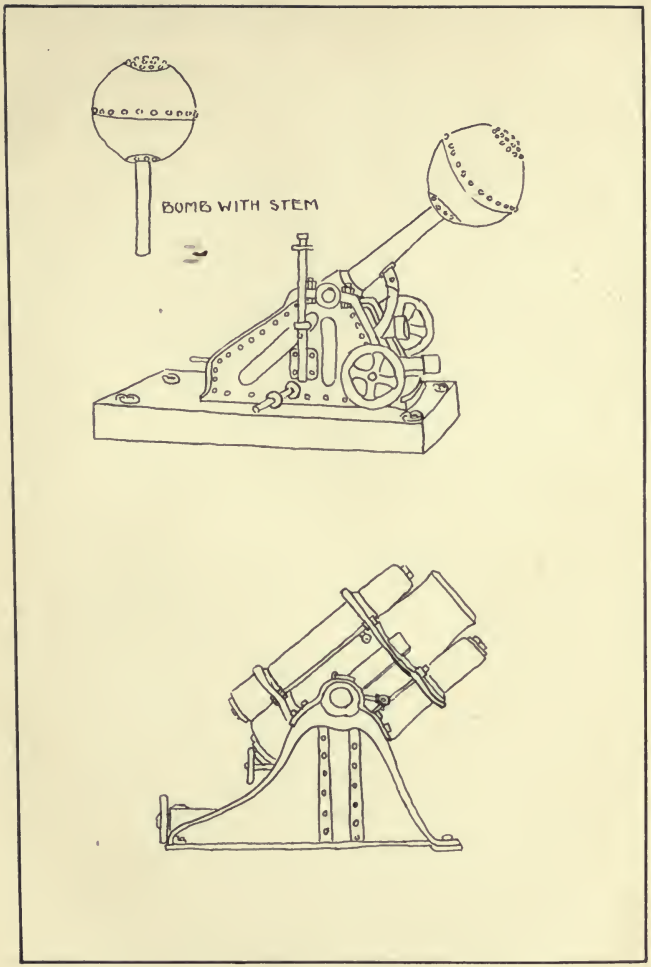

FIGURE 15:
Above is trench bomb gun firing bomb with stem; below is trench mortar firing large bomb.

formed everything, including the costs of the food. Our mess bills were considerably reduced, the food was better cooked, and we got a variety that had never seemed to occur to the late robbers that we had employed. When England began to feel the want of fighting men, it entered the brains of some of the Brass Hat officials that this was a sphere in which the women could well supplant the men—and woman came into her own again, at least in part. That was a job that women *could* do well, but it was a long time before we would agree to let them.

But whether men or women are in charge of this important department of an army, the duty will still devolve upon the officers to see that the cookhouses are kept clean and that the food is up to the proper standard. One case occurred in a camp near London where they were following the principle of allowing outside caterers to supply the food, in which the Orderly Officer of the day just managed to stop in time, the service to the men of meat that was diseased. The desire to make a little additional profit had blinded these unpatriotic people to the welfare of the troops, and they were punished with a fine and with the loss of their catering contract. That is mild punishment.

Grafters of every kind, from those who put bad powder into shells or bad leather into boots, to those who risk an outbreak of sickness through supplying improper food, should all be treated the same way that certain other enemies of their country are treated—a Court-martial and a firing party. No condemnation is too severe for them. Officers will not always find it an easy task to detect these thieves, but they must be very much on their job for this purpose.

Then again good food sometimes is allowed to become bad food through the careless handling by the cooks and their assistants. Covers are left off dishes that contain meat, butter, cheese, etc., and they are ruined by dust or flies. Contaminated food is allowed to remain in close proximity to the food that is to be offered to the troops; cooks either use unclean utensils themselves or allow the orderlies from the various units to return dirty utensils to them; or they handle the refuse and then the food without ever a thought to washing their hands. One very knowing old rascal of a cook we had used to have his place in excellent condition at eleven in the morning when the Orderly Officer used to make his rounds, and one day when I came upon him suddenly it was to find that he was using one of the bread bags as

FIGURE 16:
Simple gas mask with flutter valve or check valve. Ambulance dogs and horses in the gas zone were equipped as shown.

a receptacle for his change of clothes—a filthy collection of shirts, socks, etc. He was fired, and cursed me for many a day as he carried his great weight of avoirdupois round the training field with a rifle over his shoulder like any other infantryman.

With regard to water, while the regular line officers must also keep an eye to its general purity, it is generally left to the care of the medical staff to test it from time to time to make certain of its fitness for human use. We experienced a good deal of trouble in making the men keep their wash lines clean and in making them refrain from throwing soapy, greasy water on the ground. It is the easiest method—for them—but the costliest in the long run, and they must be made to throw it into the proper drains.

Then, too, no camp will be complete without a thorough system of garbage disposal. The refuse should be collected into tins that can be closed to keep away the rats, etc., and then taken at certain specified times to the incinerator. The latter can easily be built under any circumstances and there can be no reason for a camp not being well supplied in this matter.

Latrines, also, must be thoroughly inspected by the officers of every unit. They should be

established at some distance from the tent lines, and as far removed as possible from the kitchen. Sand and lime should be liberally supplied. The tasks of attending the latrines will normally fall to the sanitary squad who can be assisted by those who are convicted of the crime of failing to keep their lines clean. It is wonderful what a wholesome effect on a lazy man has the imposition of three days latrine duty! In the trenches this was one of the few punishments at our disposal for the slackers, for they welcomed any punishment that would send them away out of the firing line.

The same principles that have been laid down for tent life will apply more or less to life in billets. When the winter came all the troops in England and Scotland were moved into billets in towns where they could be accommodated. These were usually manufacturing towns that had numerous small homes that could each accommodate a soldier or two. From the point of view of training this is a system far from satisfactory for the men so easily get out of control. But it is the best system that we had at the time. Later on, extensive villages of huts were constructed, and the training proceeded normally.

Sometimes groups of men were assembled in

large vacant houses. There was no furniture in them and the troops had to sleep on the floor. Cooking facilities were inadequate, but worst of all were the toilet facilities. These houses had been constructed to serve as the homes for average families of five to ten, and when fifty or sixty men were turned into them the result is imaginable. The same problems will probably be presented if ever American soldiers are housed in this way, and those who happen to be officers will have to exercise the greatest vigilance.

Then again we found that there are some men who have no idea of the risk they run in leaving food lying about a house or hidden away. After a certain group had moved away from Bedford, England, it was my business to go round the houses they had occupied to see if they were fit for occupation by the incoming troops. I found to my horror in one of the houses that some of the men, instead of taking surplus meat out to the garbage cans, had put it under a board in the floor! It had been there a few days when I found it, and examination of the other rooms disclosed the fact that all sorts of things from meat and bread and tins to old clothes had been hidden in similar places by these lazy fellows.

My reader will soon realise that the officer of to-day has to keep his eyes constantly open to preserve the best conditions for the training of his men. And while I am on this point I would just add this word. Not only must the officers see to it that the food and water are good and the camp kept clean, but he must also have the men's health constantly in mind when he is planning their schedule of training. Moderation is the word. It is possible to be too enthusiastic and do the men more harm than good with hasty training. Exercises should be graduated. It must be remembered that many of the men who will constitute civilian armies are not used to out-of-door life and their training must be gentle. It is not fair for an officer to expect his men to be able to march twelve or twenty miles on a hike while he rides comfortably with them on a horse! It is a good thing for him to share the fatigue of his men that he may be the better able to direct their training. I have found that a good many of these hikes were planned by the higher officers who never walked and never understood when men began to fall out from fatigue. Rests during marching should be fairly frequent and the men should be taught the advantages to be gained by loosening their packs and throwing themselves down

flat on the ground to relax all their muscles. Singing and whistling should be encouraged on the march, for there is nothing like it to make a long road seem short, but smoking should be reserved for the rest periods.

The principle of "plenty of rests" should also be followed during physical exercises and a man should never be asked to hold his arm long in any uncomfortable position. A thoughtful officer is soon rewarded by the increased efficiency of his men. "Do unto others as you would have them do unto you"—will bring big returns in the army.

CHAPTER VI

COVER AND TRENCHES

THIS war is being fought out, not in great open battles, but in successive conflicts from the security of trenches in what "Papa Joffre" has called the "nibbling process." It is not simple work but such as calls for healthy bodies, trained minds, and steady nerves. Quick action is often necessary. Independence of thought, ingenuity and personal courage, combined with implicit obedience, make up the ideal soldier.

The training through which a civilian must go, then, will be such as to develop these qualities. Every syllabus of training must be drawn up with this in view, and all the time the attention of the officers must be kept on the fact that the training must be such as to make soldiers who will be efficient in the kind of war that is being waged. Much that has been written in the text books for armies has had to be discarded as out of date. It is no exaggeration to say that the British knew very little about modern warfare when we went to France, in spite of the

fact that we had, during this century, waged a war in South Africa, not to mention the numerous border engagements in India. We did not know the tremendously important part that artillery was to play; we knew practically nothing of the use of bombs; we had never made gas and did not know its constitution; and in the work of trench construction we were in the kindergarten class. Our enemy taught us many of these things and we learned them slowly. Now we have reached his standard and gone past him as the Tanks testify. But in pure frightfulness we can never compete with him and never intend to.

Eight hours a day of hard but varied training was our rule with frequent evening lectures. Conditions were arranged as much like those on active service as possible, even to the use of "live" bombs. Men are very reluctant at first to handle these explosive little instruments of war, and they must be given confidence in themselves long before they reach the firing line. There they are used as freely as a mechanic uses a machine.

It is said that one general who was training his men in the Midlands of England had a difficulty in getting them to keep their heads down. They could not see the necessity for it and al-

ways wanted to see all that was going on. Now in actual warfare the individual soldier is able to see very little of what is transpiring round about him, and he has to be content to come through with a whole head. Accordingly the General served out to a few trustworthy men a number of live, ball cartridges. During the manœuvres the men who would put their heads up heard some of these missiles singing round their ears, and soon learned that it was unwise to be too curious. I am not sure that I would recommend this method—for were an accident to happen it would bring disgrace and dismissal to the officer who had employed it—but it is certainly an effective means.

One of the first things to be insisted upon in training a man is that he learn the use of Cover. He must learn not only that cover is necessary, but also what constitutes effective cover of various materials. The most common form of cover is that afforded by piled up earth. A rifle bullet fired at short range will pierce about forty inches of earth so that nothing less than thirty-six inches can be considered as giving protection from ordinary bullets. Where sand can be obtained ten inches less will suffice. Ordinary turf is not nearly so good and nothing less than five feet in thickness is sufficient.

Bricks are effective. If they are placed end on giving a thickness of nine inches this will be found sufficient so that a man can feel fairly secure from rifle bullets standing behind an ordinary brick wall. Where wood is used much depends on its degree of hardness; thirty inches for hardwood and forty-five for softwood can be taken as affording complete protection. Any of the harder substances such as iron and steel, etc., are preferable, but they can seldom be obtained. Of ordinary iron plate three-fourths inch is necessary and less for the different varieties of steel. Usually several of these media must be used. Boards can be arranged with stones and sand or litter, etc., between them. The point to be remembered is that the required thickness must be obtained, not at the base of the cover but at the top, to support which a much larger base will usually be required.

When a man has learnt what thickness of materials he needs to have to protect his life, it will be a good thing to take him out and let him see how far bullets are able to pierce these media by actually firing at them from point blank range. That will give him a respect for bullets and impress the lesson on him.

But he must also be told that cover that protects is only half what is required. It must be

such as to allow him to become offensive while giving him defence. The problem is a simple one in actual trenches, where he has no alternative but to build them continuously and then fire over the top or through loop-holes of steel. But when more open fighting develops he must learn that his business is not only to get reasonable protection for his own body but to be able to bring his rifle to bear on the enemy. This necessitates a certain amount of exposure. Certain devices have been developed during this war to allow a man to fire his rifle from beneath the parapet of the trench by means of specially adapted periscopes. These are of great use for snipers but cannot be used by all the men.

In open fighting men often make the mistake of seeking cover in what is obviously the most protected place from rifle bullets, but equally obvious to those of experience as the most likely place for the enemy to choose as marks for his artillery. Orchards, woods, houses, etc., come within this category, and it is only experience that will teach a man what places to choose and what places to avoid. Wherever the enemy can view the approaches to these shelters, either by direct vision from their positions or by means of aeroplanes or observation balloons, they become dangerous as cover.

Modern trenches are intended to give cover from fire and from view. They are seldom roofed over, so that, as a matter of fact, they can be seen from the air, but it is not by any means an easy task either for an aeroplane to drop bombs there (a ditch three feet wide) nor yet for the artillery to hit them. But we seldom are able to inherit trenches—they usually have to be dug under cover of darkness while the enemy is sniping. For this purpose each man in the British army carries a small entrenching tool on his back, as well as two sandbags. Every man is trained in the use of this valuable little tool, and soon learns never to be without it. When, during an advance, he needs to provide cover for himself, he throws himself down on the ground placing his rifle at his left side, and begins to dig away the earth at his right side, throwing the loose earth up in front of him. Just as soon as he can he takes the sandbags from his back and fills them, placing them in front of him. Under this imperfect cover he proceeds to deepen the hole till he can roll his body into it. This miniature trench should be two feet wide and three feet long. Then if time permits he should add small comforts such as a recess for his feet, drainage for water, etc. He will find that he needs to dig down to about two

feet, all the time throwing the earth out in front and occasionally pushing it out a little so as to make it of sufficient width, for, of course, he will be seeking to get a parapet of about a yard in thickness at the top. If he has an opportunity of firing he should do so, not over the top of his cover but round the right side of it. To fire over it is to ask for trouble. The body and legs should be placed in such a position that they are covered as much as possible by the earth thrown up in front.

If an advance has to be made from this position, the small trench will have served its purpose in giving temporary shelter. But there are times when troops have to consolidate positions won in this way, and on the site of these primitive trenches, more elaborate ones have to be made. At the battle of Neuve Chapelle the troops took up a certain line, dug themselves in in a rough way, and then during the night they set to work to construct the very trenches that still shelter them to this day. But it was due to the entrenching tools and the few sand bags that they were able to hold the line during the hours of daylight, and when the next morning dawned they had a fairly adequate protection.

While the question of cover is very important,

I do not wish to convey the impression that men should have this subject always in their minds. To use a rock or a tree or a mound of earth as a temporary shelter is one thing; but to continue to hide behind it at the time an advance is needed, is another. The man who hesitates to go forward when he has recovered his wind, but who takes care of his precious skin by remaining under cover, is worse than useless. The object of all troops must be to get into touch with the enemy and drive him out with the bayonet. Cover will help to keep a man alive for a little while to be able to do that work.

When through adverse circumstances—usually the presence of the enemy in superior force—an army has to go to ground, it sets to work in dead earnest to build its trenches. We have learned that the best fortifications that can be got are those that are constructed in the earth. The guns of Verdun have practically never been in operation—indeed at the present time there are no guns in the old forts—and the reason for this is that earth works of such strength were thrown up at a distance from the forts that the Germans were never able to get their heavy guns to bear on them. The forts of Liége, and Namur, and Antwerp all fell before the great howitzers, but the earth works of Verdun were

too much for them. It is doubtful if large forts will ever again be used in inland places, for the earthworks have proved their great superiority.

Trenches are laid out and dug as shown in the accompanying diagram [Figure 4]. They do not consist of one long straight line, but what may be described as a succession of little rooms, about twenty feet long, seven feet deep and three feet broad. They are seldom roofed over. Each little room is connected to the ones on either side by a trench that runs behind the four-feet-square traverse that is of solid earth and which serves the purpose of localising the effect of shells, bombs, etc. If the trenches were in one straight line, a shell that fell there would be liable to injure a great many men; whereas under the present system the traverse acts as a buffer and limits the radius of its explosive force. The trench itself is dug about three feet deep, care being taken to lift off the top layer of grass and keep it aside to place over the front of the earth on completion of the trenches, to render them less visible. As the earth is lifted out it is thrown to the front and rear, and some of it put into sandbags which are then laid like stones as shown. The front part of the trench is then called the parapet and the rear part the parados. Both must be made strong,

the parapet for reasons already given, and the parados in order to protect the men from the force of shells that fall just behind the trenches. About a foot from the ground there is placed a board that is called the "firing step," on which the men stand when they are about to fire. I have said that there is seldom any roof over the trenches. It is difficult to cover in the trenches because of the limited supply of materials. Then again it is questionable if roofing pays; for, admitting that they may be able to keep out small bombs and rifle bullets, they can never hope to be able to keep out shells. The Germans used to roof in a great deal—but then they were there to wage a defensive war and did not propose to move for a good while.

In some ground the earth will "hold itself up" at the sides of the trenches, in other ground it will have to be revetted. This is done with chicken wire, or with willows or old staves where they can be had. It is important to have the sides firm, or else in wet weather especially, they will prove a nuisance to the occupants of the trenches.

Some kind of floor should be provided for the trenches. The simplest and best are made in the following way: Take two seven-inch boards about ten feet in length, nail them together to

make a fourteen-inch plank, and then cover the whole with fairly fine chicken wire. Place these boards on the ground with the side on which the wires are joined downwards. They keep the feet from slipping, are easily cleaned by being upended when they are dry, and allow the space under them to be reached easily to pick up scraps of food, etc. There is nothing more heart breaking than having to pursue your weary course for miles, sometimes, up trenches with slippery sides and sloping, wet, treacherous bottoms.

In each trench there must be dugouts for the men to sleep in. The first ones that are made will be very primitive, and will be very much like a fireplace in a room—simply excavations in the back wall of the trench almost on a level with the bottom of it. At first they used to be dug in the front of the trench, but this practice was discontinued as it was found to weaken the power of resistance of the very important parapet. In the course of time more labour can be expended upon the dugouts, and it will be found advisable to construct them of uniform size, six feet long by four feet wide by four feet high. By having them uniform we give the engineers a chance to make frames that can be used to support the roof and the sides and bring them

well from the rear to construct the dugouts. These dimensions do not make a very commodious home for four men, but never more than three of a section (of four) are off duty at the same time, and besides there is considerable danger in having large dugouts, as they present a correspondingly larger target for the guns. A direct hit on a large dugout will often bring the whole thing crashing about the ears of the inhabitants. My own adjutant and one of my brother officers were killed by falling beams in large dugouts. The entrance to the dugouts must be kept as small as possible so as to protect the occupants from shells that fall just outside.

The Germans used to follow the custom of digging many of their "funk holes," as they were called, many feet underground. Sometimes they went down twenty and even thirty feet. The idea of this was that they could retreat into these secure places during a bombardment and then emerge with their machine guns as soon as the attacking infantry had started to approach over "No Man's Land." We never followed that custom, for while it will work at times, yet the attacking infantry may be upon you before you are aware of it and have you at their mercy with bayonets and bombs from the

parapet. This the Germans have learnt to their cost many times on the Somme.

Many efforts have been made to construct dugouts, reasonably near the surface, that would be shell proof. This is a most difficult matter. It is easy enough to make them shrapnel-proof. A layer of galvanised iron on the roof covered with a foot of loose earth will accomplish this for the velocity of shrapnel is not great. But with high explosive shells it is different. It was seen at Liége and Namur what terrific effects high explosive shells fired from howitzers could have even on re-enforced concrete. I am told that at Port Arthur, a Russian General was killed in a shelter that was covered with over twelve feet of concrete. The closest we can approach to a shell-proof dugout on the field is as follows: Dig an approach trench about ten feet deep, leading into a hole of this depth, by any dimensions you may choose—say six feet square. Put in supports for the roof that shall be four feet from the floor. Roof in with steel rails, such as are used on railroads, then cover them with two or three layers of bricks that have been broken into small pieces. Leave a five-foot air space and then place an exactly similar roof above and cover the whole with earth. Small shells will be stopped at the

first set of rails, while large ones may possibly pierce them. But the effect of the explosion will mostly be taken up in the airchamber and the dugout itself protected. The reader will readily perceive the difficulty of constructing such dugout on the field and they can certainly not be provided for the accommodation of the common soldier however precious his life may be.

As the days go by, every effort must be made to improve the trenches. This can be done in many ways, some of which will be obvious. The front line is, of course, the most important one, and the greatest amount of work has to be done there. But support and reserve lines as well must be constructed and many communicating trenches. Support lines were usually dug at a distance of thirty to eighty yards from the firing line. In them we kept a few men to be used in case of emergency. This line was an exact duplicate of the front line and was intended to be used in case we were pushed back. The reserve line was about five to eight hundred yards back from the front line and was not brought to any very great degree of completion. Interspersed between these three lines were many redoubts, or especially strong points containing machine guns, etc., whose defenders were ex-

pected to hold on to the very last and take advantage of their more secure position to make the attacker pay dearly for his advance. All these lines had to be linked up by communicating trenches, which started about a mile in the rear of the front line and went up in zigzag lines to the latter position, crossing the other trenches on their way. These communicating trenches are used for the purpose of bringing up troops and supplies, etc., and for taking to the rear the men that have been wounded. It is usually arranged to have some of these trenches "Up" and some of them "Down" roads. Each line of trenches (except of course the "communicating") contain dugouts for the use of the troops that hold them. The distance between the communicating trenches varies from twenty-five yards to three or four hundred according to the state of perfection of the trench system.

For special weapons such as machine guns and bomb guns, special shelters have to be made. Extra strong parapets are provided as well as head cover of railroad ties, and every effort is made to keep the exact position of the machine guns secret from the enemy. We soon learnt that he was very anxious to find our ma-

chine guns and would shell us liberally in the hope of being able to locate them.

Care must be given to the question of drainage. Small ditches should be dug at intervals of a few yards to lead the water to pits in the rear. In Flanders, where we were very near river level, we installed hand and power pumps to keep the water from taking possession of the trenches. Even then, on rainy days we sometimes were in water up to our waists.

Great care must also be taken in the construction of latrines. The method that was followed was to dig a short "blind alley" trench at right angles to one of the communicating trenches, and at a distance of twelve or fifteen yards from the front line. Starting from the end of this blind alley, the trench was gradually filled in with earth as it was used. In other cases biscuit tins were used as receptacles and the ordinary sanitary squads emptied them at specified times into a fairly deep pit. These latrines should be well protected with sandbags to keep the enemy from finding them and training a machine gun on them, in the knowledge that they were very likely to get some of the men who used them during the day.

This, I believe, gives the principal points in the construction of the trenches. Men should

be taught to dig them in broad daylight at first and then when they have learnt the knack, they should be set to dig them at night. From time to time during their training they should be made to return—preferably to the same sections of the trenches—to improve them and maintain them. An excellent scheme is to arrange competitions among the men to spur them on to invent ingenious devices for protecting themselves and their fellows during their occupation of them. At certain times they should also be made to spend a night and then several nights there, going through the regular routine of sentry duty, stand to arms, etc., just as they will have to do in real warfare. Another scheme is to choose opposing sides with trenches within easy reach, say, twenty-five yards apart. Arrange a three-day tour of the trenches, and let each side attempt to surprise the other. Umpires can be stationed in No Man's Land to decide as to the relative merits of the two sides. At certain times, additional interest can be given to the conflict by some harmless missiles such as sand bags (without the sand!) rolled up and made into a ball the size of a base ball with string. These will also give excellent practice in bomb throwing.

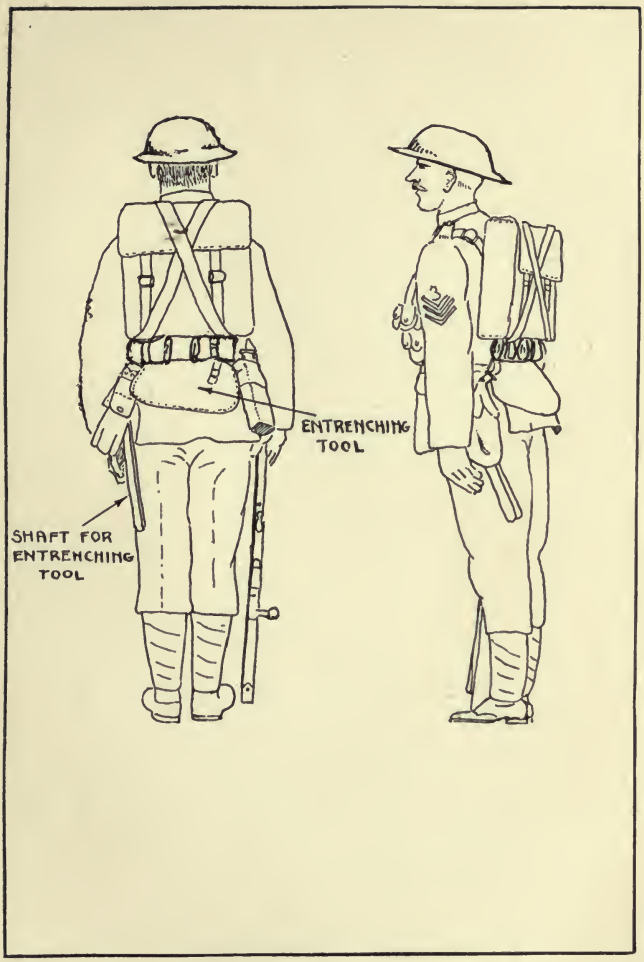

FIGURE 17:
British soldier fully equipped with pack, entrenching tool, sandbags and steel helmet.

The rules of the trenches can be summed up in a few words: "Keep your spirits up and your head down."

CHAPTER VII

PROTECTION OF TRENCHES

THERE are two things to be done after the trenches have been dug—one is to keep them in order, and the other is to provide outside protection for them. The elements themselves are enough to play havoc with the sand bags and the walls of trenches, but if you add to this the fact that they will immediately become the marks for the enemy gunners you will see that the cost of upkeep is liable to be high.

During the first year of the war the Germans were supplied with an amount of shells that enabled them to do what they pleased with our trenches without our being able to reply. Indeed, for many months, as is now well known, we were on an allowance of six shells per battery per day, or about one shell per gun per day! Gunners will readily appreciate the uselessness of a stock of this kind. The result of this discrepancy in the number of shells was that the enemy could shell us with impunity. He used

to set to work to break down our parapets early in the morning, and then, knowing that we should have to repair them during the night, would train machine guns on the breeches that had been made. It is a very disheartening business to have the parapets that you have laboured so hard to construct, knocked down in a few minutes. There would be some consolation in being able to serve him the same way, but that was denied us at that time. Indeed, one of the best ways to preserve your trenches is to let him know by experience that every time he breaks them down, you will do the same thing to him.

Every night there will be something to do in this connection. No effort must be spared to get the trenches into first-class condition and keep them thus. It is very annoying to relieve a battalion that has lain down on their job during their tour of duty in the line, and to find that you have a great deal of work to do—work that could have been avoided if they had taken reasonable care of the work that had already been accomplished when they took over the trenches.

As to the outside protection for the trenches, that consists for the most part of barbed wire. Sir Ian Hamilton, in his report on the Darda-

nelles Expedition, paid a tribute to the effectiveness of the Turkish barbed wire. It was the means of stopping a British advance more than once on the Peninsula, just as it was in France. At the battle of Aubers Ridge, fought on May 9, 1915, we suffered most heavily from the fact that the wires had not been cut, and therefore we were unable to make progress. We had to retreat, leaving a number of our dead and wounded before the enemy lines. It would be difficult to exaggerate the part that barbed wires have played in this war. Wherever they are set up it means that a thorough bombardment must be made before an advance can be risked.

The erection of these entanglements is really the work of Engineers, but so extensive is the task that infantrymen have to be called in to do the pick and shovel work while the engineers do the directing. Stakes are driven deep into the ground, and round them the wire is twisted as it is taken from stake to stake. Some wires are laid on a level with the ground, some a few inches above it, then all the way up to ten or fifteen feet into the air, making a regular network. We tried to have our wires extending over a width of ground of at least twenty feet.

But not only are barbed wires used, but also

electrically charged wires in some cases, though between the lines they will seldom be of much use for a single shell may short circuit the system and it be rendered harmless. An effective method was that of placing trip wires near the ground, and then a little beyond them bayonets with the sharp points uppermost, or pointed sticks, so that when the man tripped over the wire he would fall and impale himself on the spikes. Sometimes bombs were attached to the wires in places where it was thought likely that the enemy would attempt to cut them or come through them.

As these entanglements have to be erected during the night and under the fire of the enemy it will be seen that it becomes exceedingly dangerous work. But it has to be done, and the risk must be taken for the sake of the additional security it will give to the trenches. It has been suggested that this is work to which the conscientious objectors in England—the Pacifists here—might be put. It is necessary work for the preservation of life, and is not specifically military. It is labourer's work. There is no chance of fighting out there nor of taking human life. Then it offers an excellent opportunity of winning the martyr's crown because some one is sure to turn a machine gun

on you if you remain out there long enough. All of these points should appeal to Pacifists. But the greatest reason from our point of view is that it would save the lives of valuable men!

The men in the trenches are further protected by men whose business it is to go out into No Man's Land and remain there hours at a time, lying in some kind of hole, and listening to be able to detect the presence of the enemy. Should the enemy make his appearance in small parties, these listening posts can usually take care of them, but when they are in large parties, the listening post men return to the trenches and give warning. The best nerves are needed by the men who go out into the open to do this work, and sooner or later every one has to take a turn at it. These listening posts are sometimes entirely disconnected from the trenches, and out beyond their own barbed wire, through which the men have to make a passage for the time being, and of course keep it secret. But sometimes they are connected with the fire trench by a shallow trench or sap which is dug out into the neutral territory whenever circumstances are favourable.

When the troops landed at Suvla Bay, on the Peninsula, they found several excellent water holes that were most inviting to parched and

thirsty men. A rush was made for them, when suddenly a terrific explosion was heard, and dozens of men fell flat on the ground, some dead, some wounded. The Turks had taken the precaution to place land mines round these wells, and as soon as they were stepped upon, the mines went off. This is a genuine ruse of war and was used also between the lines. The Turks never resorted to the treachery that General Botha had to overcome in German East Africa where he found the wells, not mined, but poisoned. A recent report from France tells us that in the present retreat the Germans are employing the same dastardly tactics. It is one thing to protect your trenches or your line of retreat; it is quite another to take the lives of men in this barbarous way.

Trenches dug in the foregoing manner and protected by barbed wire will give the infantryman a chance to live. But he will increase or decrease the probability of coming out alive according as he is careful or careless during the time he is there. Nothing, of course, can save the men if the enemy is determined to thoroughly shell the line, and the orders are to hold it. The sanest thing when a bombardment begins is to withdraw to the next safe line. But the enemy will sometimes be content to allow

men to remain in their trenches for a while without shelling them provided they do not wilfully provoke him. A column of smoke arising from the trenches where the men were cooking was usually considered by the enemy as provocation, and over the shells would come. This brings us to the point that I wish to make regarding fires. The men must eat during their tour of duty, and they must have hot food, consequently fires of some kind are needed. But they should be made of very small pieces of wood cut up with a pocket knife so small that they will not give off any smoke. By following this method a safe and very hot fire can be made. At times we were supplied with small quantities of charcoal which was very acceptable. As a matter of fact, more liberties in this connection can usually be taken in the firing trench than in the support or reserve trenches. The enemy knows perfectly well men are in the firing trench. He sees from the rifle fire that that is manned, but it is a good thing to keep him guessing about the other trenches.

For the same reason there should never be any unnecessary noise in the trenches. It provokes the enemy to throw bombs and other unwelcome missiles.

I have indicated that the present form of

trenches, being in a continuous line, makes it necessary either to construct loopholes or to look over the top of the parapet in order to fire. I have indicated too that there are several forms of rifles that can be fired through periscopes, but these must as yet be considered special and are not for the ordinary man to use. No doubt such a rifle will be invented and generally used in the future. But in this war we soon learned that it was "unhealthy" to put our heads above the parapet any more frequently than we had to. Therefore, in order to see what the enemy was about, and to wait for sniping opportunities we used periscopes. Some of those that were brought to France were huge cumbersome boxes that made a fine mark for the enemy's sharpshooters. But the kind that was most generally used after the first six months of the war was that which consisted of a stick with two slanting grooves in it, one near each end, into which grooves small mirrors could be fitted. We found them quite effective, and should an accident happen and a mirror be broken they were easily replaced from the store we carried with us for that purpose. Not having a box of any kind they were very difficult to see from the enemy lines.

Certain gunners who used to come to the

trenches as Forward Observing Officers were equipped with a splendid periscope that had beautiful lenses in it. But it was very costly and could not easily be repaired if once damaged.

To make the image in the periscope clearer, binoculars can be applied to the lower glass at the proper angle, and almost as clear a view obtained as by looking over the parapet. One disadvantage of the periscope is that it makes the distance seem greater than it really is, and many a man receives a shock when he places his head above the parapet after looking through a periscope for a while, to see how close the enemy trenches are.

Trenches are exposed to attack not only from the surface but also from the air and from beneath the surface of the ground. Aeroplanes come over and drop steel darts or bombs, and only very strong head cover can give protection against them. But it is very hard to hit a trench from the air with a missile of this kind, and the danger to the men in the trenches is not very great. By far the greater danger comes from mining. Men must be on the watch all the time to detect these operations of the enemy and to forestall them where possible. Special instruments like giant stethoscopes have been

invented and men are told off to hold them to the ground to detect the sounds of digging. But, while these instruments are of use, the best means is a well trained ear. If the enemy is discovered mining towards your position, the only thing to do is to countermine him and try and blow him up before he is ready to touch off the fuse that is intended for your destruction. It is not an easy matter to decide just where the countermine should be sunk or how far to go. Many combats have been fought with pick and shovel in the bowels of the earth in cases where one side or the other has broken through the gallery. But any risk must be taken rather than let the enemy enjoy uninterrupted his work of mining you.

CHAPTER VIII

ARTILLERY FIRE

IT may be desirable to indicate the various kinds of shell fire to which trench men are exposed. (I pass over rifle fire which is harmless so long as men keep their heads down and avoid corners from which they can be enfiladed.) No amount of caution will save a man from shells if they happen to be falling in his neighbourhood. The most frequent visitor of the shell variety is of course the shell from the field gun. The British use an 18-pounder, the French a 75 millimetre, and the Germans a 77 millimetre—all shells of about the same calibre (3 inches). Of these the best gun is undoubtedly the French, which is a perfectly marvellous piece of mechanism. But all of them are deadly in their effects. They may fire either shrapnel or high explosive—always spoken of in the army as H. E. In the former case, the shell that is fired contains a nose that comes off at the time for which it is set, and liberates hundreds of small round leaden bullets. These go

out in cone shape and spray the ground round about. Shrapnel is very effective against men in the open but of little use when they are entrenched, for very few of the bullets from any shell will enter the ditch itself. When the British army first took the field they had very little H. E. Shrapnel had been used successfully in South Africa, and it was thought it would do in France. The proportions used were 96 per cent shrapnel to 4 per cent H. E. We learnt our lessons dearly—as we usually do—and in time we came to realise that for breaking down parapets shrapnel was absolutely useless. The proportion that is now used is about 90 per cent H. E. to 10 per cent of shrapnel.

The soldiers used to call the 77 mill. shells of the Germans "Pip-squeaks." They used to give a "pip" and then a "squeak." If you heard the first and did not hear the second you were dead, while, if you heard them both you could consider yourself still alive. Another familiar name for them was that of "Cheeky Charlies," from the fact that they had the habit of coming in without being announced.

In addition to the field guns there are the "Mediums" or guns of about 5 inches calibre. The familiar name for the German shell fired from them was "the Crump"—by reason of the

fact that they sat down alongside you with a terrific "Crump" as their greeting. As in the former case, those who could report having heard the "Crump" were still alive.

Then there are various long range guns between five and nine inches in calibre. But long range guns do not play the part that high-angle or Howitzer guns do. The Germans wasted a good many shells in firing at targets even as far away as twenty-three miles, but nowadays shells are usually kept for targets that there is a fair chance of hitting and not for blind firing.

The Howitzer that has come to play a very large part in the operations of the British is the gun that is familiarly called "Mother"—a gun of 9.2 inches calibre and which projects a very weighty shell. The Germans have a corresponding gun of a little larger bore.

Last of all there come the great guns of 15 and 16 inch calibre. These guns need concrete foundations and cannot be set up in a hurry. Fortunately—for them—the Germans had a number of these foundations already prepared in unsuspecting France and Belgium long before the war. Our own gun of this size we call "Grandmother." The shells that fall from the German guns of the largest size we call by various names—either "Bertha Krupps" from the

name of the proprietress of the great gun works at Essen; or "Fat Berthas" for the same reason; or "Jack Johnsons" from their hard-hitting capacity; or "coal boxes," "black marias," etc., etc. The effect of these shells was terrific, as may be imagined, but there were many occasions when they pierced so deep into the soft ground that a good deal of the force of their explosion was lost. Of course for work against forts there is nothing like them. They opened the eyes of the world from their terrible destructive force shown at Liége and Namur.

Akin to shells in their effects are the now familiar bombs. These are of all varieties and sizes. They range from the small hand grenade that is about the size of an ordinary lemon and is simply heaved into the opposing trench by the soldiers, to the immense bombs weighing two hundred and fifty pounds that are thrown from trench mortars, or guns of short barrel and very wide mouths. It was a long time before the British army appreciated the value of bombs and we could not get a supply of them. The "Tommies" set to work to manufacture them in the trenches and a good many lives were lost there through premature explosions.

Practice is absolutely necessary before a man is fit to be allowed to handle a live bomb. He

should be trained first of all to throw a tin filled with stones, and learn the trick of letting it go at the correct moment. The first time a man throws a bomb he is simply anxious to get rid of it without any regard for the time the fuse has been burning. Most fuses now are five seconds and that time must be calculated to a nicety to get the best results. If a bomb is thrown too soon, the enemy may pick it up and throw it back—this has happened many hundreds of times. It should be retained in the hand during the first and second seconds at least and then thrown so as to explode OVER the enemy trench on the fifth second. Our men were taught to get out of the way of bombs coming into the trenches if they could—there is no use staying to be blown up under ordinary trench conditions—but if they were under such circumstances that they could not get out of the way they were supposed to catch them and throw them away, or throw them back as hastily as possible. Men become experts in this just as they do in catching base balls. Where a bomb could not be picked up and endangered the lives of men in the trench who could not get away from it, men have often thrown their bodies upon it, and thus, in a most gallant and

self-sacrificing way, given their lives for their comrades.

Of course catching them is out of the question when it comes to the large bombs. Absence of body then is better than all the presence of mind. When they actually hit the trench —which is a very difficult thing to do—they do frightful damage. But when they miss their mark they usually open up a lot of earth either before or behind the trench, and perhaps lay out a man or two with concussion.

Of the same variety are aerial torpedoes which are simply bombs with flanges on their tails to give them direction.

Sometimes the bombs that were sent over were not H. E. in the sense that they exploded a steel shell that sent its various pieces large and small hurtling through the air, but were simply large oil drums with a quantity of H. E. in them. Men were killed right and left, not from being hit with anything, but merely from having been in the neighbourhood when they exploded.

Rifle grenades are a form of bomb on the end of a stick that fits into the muzzle of the rifle and is then discharged by means of a blank cartridge. They are effective only at short distances. Indeed, even with trench mortars, the

projectiles can seldom be hurled more than four hundred yards, so that they are almost always used on the fire trenches and are never directed to trenches farther back.

CHAPTER IX

GAS AND LIQUID FIRE

A NEW and deadly form of warfare is the use of Gas. Until April, 1915, we knew nothing about it and then we had to face it to our great cost. We had no masks and no apparatus of any kind to help us combat it. Having been taken by surprise in an engagement that almost cost us Calais, we set to work to devise means to counteract it. The method adopted is the helmet, made of cloth, and very much like a fireman's smoke helmet. It has large goggles similar to the ones that motorists wear. The cloth is kept saturated with a solution of ammonia which acts as a neutraliser of the chlorine gas. A tube passes through the cloth into the mouth, and through this tube the air from the lungs is breathed out. It is, of course, fatal to inhale air through it, and all the air that is breathed in has to be inhaled through the cloth of the helmet.

The importance of training the soldier to be

able to meet gas cannot be overemphasised. He should be drilled frequently with the helmet on to accustom him to the feeling of it, and alarms should be sounded from time to time to teach him to don the helmet as rapidly as possible. In some of the military schools in France the men were actually taken without helmets into chambers where there was just enough gas to make them realise it was there, and were then sent into other chambers with a "deadly" mixture of gas with their helmets on. This training makes them realise the importance of helmets.

Many forms of helmets have been used from time to time, and in this matter as in many others we have learnt from our enemies. For the most recent British mask contains the "nosebox" or "beak" which conforms to the German model. As in most other things, simplicity is to be desired where it can be combined with effectiveness, and it is the simplicity of the cloth helmet with the tube that even to-day commends it to many critics above the "box" forms—those that require an independent supply of oxygen. Where men such as gunners are liable to be exposed to fumes for some considerable length of time, either from cylinder gas or from shells or even from tear shells, or must

continue at their posts at any costs, an independent fresh air supply is necessary.

Detailed instruction also should be given as to what men are to do during and after the gas attacks; for there are some forms of gas that do not appear to affect the individual at all, and then all of a sudden, when he begins to use his limbs, he drops dead from heart failure. Instruction on this subject must come from the medical and chemical experts who have made a close study of the effects of gas.

Allied to gas is LIQUID FIRE. This fire is projected in long streams from the nozzles of pipes that come from a high pressure cylinder, sometimes placed in the bottom of the trench, and sometimes carried on the backs of special men. These globules of burning oil that are sent forth reach a distance of thirty or forty feet from the nozzle of the pipe. The effect of liquid fire is more terrible than words can tell, and it requires great bravery on the part of troops to have them advance in the face of these streams.

Clouds of SMOKE as well as gas are used. One of the ruses that was adopted at the battle of Loos was to project smoke forward for a few minutes until the enemy should become quite used to it, and then send out streams and waves

of gas to take him unawares. These are frightful methods of warfare which the Allies have had to turn to in order not to allow the enemy, from his violation of his pledged word, and contrary to the rules of warfare, to gain an unfair advantage. But there are many of us who believe that no other enemy than the Germans would have descended to these depths of infamy.

UNIV. OF CALIFORNIA

CHAPTER X

THE ATTACK—DEFENCE

SOONER or later in the course of his trench experience the soldier will be subjected to an infantry attack. Artillery shelling, aeroplane attacks, mining, etc., are part of everyday's programme, but infantry attacks come only now and then. They *may* come at any time and the enemy is not in the habit of announcing them beforehand. It is not likely that they will occur in broad daylight without any warning. If they are to be made then, they will be preceded always by a concentrated artillery preparation. Night is the danger time. There are two periods of special danger—one, the hour before sunrise, and the other the hour after sunset. At these times there is sufficient light for men to be able to see their way to advance over almost any ground, and not sufficient light for the defending force to be able to take careful sight with their rifles and machine guns, etc. Consequently these hours are the most favourable for making an attack, and every one

must be on the alert to ward them off. These times are called "Stand tos" or properly "Stand to arms." While they last, every officer and every man of the front and support line is on duty. Rifles are cleaned, inspected and loaded, bombs, gas-masks, revolvers, bayonets, etc., are got ready, and every one remains at his post of duty. In the blackness of night and in the broad light of day the danger is much less and consequently some of the force can be relieved for other tasks, during the night, or for rest during the day.

Should an attack be made, it becomes the business of the men in the trench to hold the enemy off just as long as they can, at whatever cost to themselves, while some one telegraphs back for the supports and reserves, and possibly for the assistance of the artillery. Trenches must never be surrendered without giving these fresh men a chance to regain the advantage, and should the trench be lost, a counter attack must be immediately arranged before the enemy has had time to reverse the trenches and connect them up by saps and communicating trenches with his own system. No time must be lost, for the longer the delay, the greater the difficulty of making the counter attack successful.

As to the methods of holding the trench

against an infantry attack, it will be evident that the men must take up their position on the firing step and fire as rapidly and as steadily as they can. Bombs should be kept and thrown only when the enemy has got well within range for them. Machine guns can do effective work of course and the artillery should be communicated with and they will open fire with shrapnel. Where ammunition permits, a barrage or curtain of fire should then be established behind the enemy's front line to prevent him bringing up reserves to take the place of those that have fallen, and also to weaken him for the time when a counter attack on him has to be made. Star shells, that illuminate the ground, will of course have been fired to give the machine gunners and the rifle marksmen a better chance to find their targets.

Obedience, steadiness and tenacity are required of the men, and only training and experience will develop these excellent soldierly qualities. The poor type of soldier will either forget to use his weapon altogether or else fire wildly and uselessly. An infantry attack is not a pleasant experience, but soldiers must be taught to expect it, and that it will probably give them the opportunity of using the final and greatest weapon of the infantryman—the bayonet.

CHAPTER XI

THE ATTACK—OFFENCE

TRENCHES can only be considered as devices for affording temporary protection during the time that preparations are being made for delivering an attack. No one wants to remain in trenches for ever. At the best it is a miserable kind of life, and from a military point of view, it gets nowhere. Nor is it capable of being maintained without great loss in men. So costly did it become to us, and so great was the monotony and the feeling of helplessness, that we welcomed the word when it came to us to deliver an attack. At least that would bring us action, and give a variety to life.

During the first year of the war, attacks had almost always to be made without sufficient artillery preparation. Even at the Battle of Neuve Chapelle, where we assembled over 480 guns on a little more than a mile of front—a greater collection than had ever been got together in history—we had not sufficient artil-

lery preparation for the attack that was to be made. There were enough guns but not enough shells to fire from them. The result was that much of the enemy's wire was still intact when the infantry rushed over, and the advance was held up in certain important points where we could be enfiladed.

We have learnt that the only method of delivering and infantry attack against prepared positions is to give them a thorough hammering with shells. Every particle of wire should be destroyed, so as to eliminate the risk of men being shot down as they attempt to pass through it. At the Battle of Loos our guns bombarded their lines from Monday morning to Saturday morning, and kept hammering at them so as not to give them a chance to repair either their wire or their parapets. An effective curtain of fire was established at the same time to render it impossible for them to bring food and supplies up to the line that we were about to attack. For the last ten minutes before the men actually went over the parapet, there was a perfect tornado of shells falling upon and behind their lines. Any one who remained at his post alive during the previous days would find it almost impossible to continue there during this deluge.

If the artillery preparation is adequate, the

battle is half over. General Haig's successes on the Somme, and the consequent German retreat on a large scale, have been due, in the first place to the excellent work of the gunners. Of course the gunners themselves have been dependent on many other branches of the service pre-eminent among which is the aeroplane corps. Targets are seldom seen by the gunners who have to depend for their information on the men who can fly ahead and come back with actual photographs of the positions to be bombarded. Too great emphasis cannot be placed upon the work of these gallant flying men. During the battles of the Somme, they have not only been doing this reconnaissance work for the gunners, but they have been flying very low after they reached the enemy territory and using their machine guns on the advancing or retreating infantry. So low did they fly, indeed, that the enemy did not risk firing upon them with their guns for fear of hitting their own men. They were fairly safe as far as the opposing infantry was concerned for the man in the machine is well protected from below and at the sides from rifle bullets.

While the artillery is active, the junior artillery, the bomb gunners must also get to work

to throw over as much H. E. as possible to break down the resistance of the enemy.

Then again there is the gas, which has now come to be used as a definite part of an offensive. Gas is conveyed to the trenches in large drums, under pressure, and at the proper moment is liberated in waves against the enemy. It should be in the hands of trained men who can be trusted not to liberate it a moment before the time comes.

While gas has proved very effective under certain circumstances—and almost decided the fate of Calais early in 1915—yet it is obviously dependent upon the weather and especially the wind. Even if the direction of the wind is correct for the use of gas, the kind of wind may not be suitable at the moment. The wind must not be high nor squally, but needs to be low and gentle, just sufficient to carry the gas across to the opposing trenches without dissipating it on the journey. Then again it must be remembered that it can seldom reach the gunners who may open up intensive fire on the trenches from which it is being liberated, burst the drums and make the place untenable. Of course all the men who are employed in liberating gas should be warned to have their helmets in position to guard against these emergencies, and also

against leaks in the drums. Gas masks must be tested daily to see that they do not admit any of this deadly poison.

In addition to these preparations, a good many reconnaissance parties must be sent night after night out into No Man's Land to map it thoroughly, place directing boards there, dig small saps to facilitate an advance, and learn the condition of what remains of the enemy wire. This work is difficult and dangerous, and must be given to trustworthy, brave, resourceful men. For it must be remembered that the enemy will probably come out into this neutral territory at night to try and learn the plans of the opposing side, just as they are trying to learn his plans. Many bloody conflicts have taken place out there under cover of darkness when the patrol from one side has entered into conflict with the patrol from the other.

Those in charge of the attack will arrange that at a specified time the bombardment will cease, and the men leap over the parapets. This time is usually arranged for, say, one minute after six, or thirteen minutes after eight—some time which the enemy cannot guess accurately. During the final awful ten minutes, the finishing touches are given to rifles and bombs and revolvers. Then exactly at the appointed time

the electric buzzers in the trenches sound the signal to advance. The first man over the parapet is always an officer. Unlike the Germans, we do not drive our men but expect them to follow us, and this accounts in part for the very severe casualties that have been suffered by British officers.

Where the distance between trenches is short, say, a couple of hundred yards, it is covered as fast as men can run. It is a veritable race with death; for the enemy must not be allowed to recover from the bombardment in time to get his machine guns up into position again before the infantry arrives before his trenches. The attacking infantry must throw themselves down into the trenches and begin work at once with bomb and bayonet. Since the enemy has adopted the plan of having his dugouts deep down in the earth, it is a little easier to reach him before he is able to emerge. In this work bombs are most effective. All of the enemy communicating trenches must be effectively barricaded or protected by bombers and riflemen to keep him from bringing up any reserves and thus taking the attacking force from a flank. In an attack of this kind the ground cannot be covered too rapidly, and no thought must be given to cover.

But when attacks have to be made over long distances, the plan is either to dig out saps that will reach to within a reasonable charging distance of the enemy, or else have the infantry proceed at a moderate and steady pace, so as not to arrive at their objective winded and useless for bayonet work. The principle of having sectional rushes while neighbouring sections open rapid fire will be found useful.

The German method of advance is characterised by the close order formation, the British by the open order formation. The German training is such that he cannot act independently to any very great degree, but needs to feel the support of another strong arm near him, if possible touching him. They attack in waves of men packed so closely together that it is impossible to miss them if you get a shot at them at all, and of course they are ideal marks for machine guns. But in the British and French armies men are trained to be self-reliant and to advance even when they seem to be alone. An interval of three paces is usually maintained between individuals, and that renders them less of a target for marksmen. They are also trained to take command of other men should their officers or non-commissioned officers be put out of action.

Should any of the enemy wires be still intact, they must be cut by the first comers so as not to hold up the main attack. This is done by ordinary wire cutters—which every man is supposed to carry as part of his equipment—or else by a new device that is attached to certain rifles. By means of this a number of the wires are caught together and then when the rifle is fired the bullet cuts them and a passage through is made.

If the trench should be successfully taken and all the enemy disposed of, the first work to be done is to "reverse" it, and connect it up by communicating trenches with the old position. For this work engineers are sent immediately behind the infantry, and they carry with them quantities of sand bags and shovels and picks and wire, etc., with which to complete this task. Of course the infantry must also help, and for this purpose it will be as well for each man to take with him a few sandbags on his back—not enough to encumber him, but sufficient to be of service in putting up hasty defences.

The test of the success of the action will come as soon as the enemy is able to organise a counter-attack. He will know the range of the trench to a nicety and will not be slow to hurl the weight of his shells against it. Then, too, he

will try to bring up reserves, who with bayonet and bomb will attack their old position. For many weary hours the infantry may be busy on this task of repelling counter attacks, and consolidating their new position.

So many details have to be cared for in an attack that it is well to rehearse it thoroughly beforehand and to see that every individual knows just exactly where he is supposed to be and what he is to do. Only in that way will confusion be avoided. It will be necessary also for the attackers to wear distinguishing marks in the form of a white band on the arm or a white piece of cloth on the back if the attack is to be made in the darkness or with poor light.

The question of prisoners inevitably comes up. What is to be done with them? How are they to be taken care of? It will be seen that this is a big problem in an attack where men cannot be disengaged from their tasks of taking trenches without greatly weakening the operation. To tell off men to look after prisoners when every man is needed to break down the resistance that is still being offered by others of the enemy, is a procedure obviously surrounded with dangers. And yet, in the interests of humanity it has to be done, for the only other alternative is to take no prisoners. At

the battle of Loos many of the German prisoners that we took came to us in embarrassing mobs. They were weak and hungry and required little persuasion to lay down their arms. Under these conditions we could manage a great many prisoners with a few armed men. Where they surrendered in ones and twos we found there was a disposition on the part of some of our troops to disengage themselves from the battle to lead them back. A man is naturally proud of the fact that he has taken a prisoner and wants to deliver him himself. But we insisted that they be turned over at the earliest opportunity to others who were in charge of small numbers of prisoners, and that as soon as possible they be given into the charge of men who were slightly wounded, but who could still be relied on to give a good account of themselves if trouble arose. It is also a good thing to have a quantity of loose telephone wire about —as almost always happens in a battle—and wind this round the prisoners, making sure that they keep their hands in the air. Even barbed wire will do, though it is not so comfortable for the prisoners concerned, and it may be necessary to relax the rule about keeping both hands up!

Raids are attacks on a small scale, and on a

definite portion of the enemy's line. They are usually carried out by parties varying in number from twenty to a hundred commanded by one or more officers. Almost the same preparation as for an attack is necessary in most cases to break down the barbed wire before the lines. But in some cases they are carried out as surprises and then other means must be relied on to overcome the difficulties of the barbed wire. As in the case of attacks, rehearsals must precede the operation itself so that every man will know exactly what he is supposed to do and where he is supposed to be. In a recent raid during the time that the snow was on the ground, the Canadians secured a number of women's nightgowns and put them on over their uniforms. In this remarkable garb they proceeded over No Man's Land to visit the German lines.

If artillery preparation has been given, that must be depended on to have broken the wires and the thing to be done then is to reach the enemy parapets before they have time to recover and bring the machine guns into action. But by far the greater number of raids come as surprises to the enemy. They do not hear the men beyond their parapets lying on their stomachs and busily cutting the wires with their

snips. The first they know of it is when a bomb lands in the trench or else the body of one of the attacking infantrymen, as he enters their stronghold to begin his work of destruction. In raiding parties, more than at any other time it is well to remember the adage that "silence is golden," and that the best results can only be obtained if every man is determined to follow his instructions to the very letter. If the party is cut off by superior forces it must make up its mind as to what it is going to do, though most men, I am sure, will prefer to fight to the death rather than surrender.

CHAPTER XII

EQUIPMENT FOR THE FIELD

THE question is often asked by prospective soldiers as to what is the irreducible minimum that a man should take to war, in the way of equipment. I say irreducible, for it is to the interest of the infantryman who has to carry practically all his belongings on his back, to reduce his load as much as possible consistent with efficiency and comfort. The tailors in London who undertook the tasks of equipping young officers for the trenches, having more interest in making sales than anything else, did their best to persuade their victims that the omission of one of dozens of things they proposed would expose them to very grave risks. No one could possibly have carried all the equipment they suggested and no Army Service Corps would ever have been able to handle it as baggage. Some of the men who fell victims to these outfitters went to France looking more like "Xmas trees" than anything else, for it was only when there was no more

room on their bodies to hang anything that these excellent gentlemen were satisfied, and let them depart.

In this list that I am now giving, I propose to deal with the equipment of the soldier first and then add to it the items that seem to me to be essential for the Officer.

First of all there is the rifle, the soldier's best friend. It should be cherished and cared for as though his life depended on it—as it frequently may. We used to inspect the rifles of the men at least twice a day in the trenches, and any sign of neglect was at once dealt with. It must be kept free from all rust and dirt, well oiled and polished, and with every part of the mechanism in first class working condition. Any text book on musketry will give the information necessary for the effective care of the rifle. We found that the breech of the rifle was often in danger of becoming fouled through mud or sand. Accordingly we advised the men to keep that part covered whenever the rifle was not in action. Small khaki cloths with snap buttons were made, but where these were not obtainable, the leg of a sock served quite as well. But it must be easily removable.

Rifles are sometimes fouled through putting into them cartridges that are rusty or muddy.

All cartridges should be cleaned before being inserted. Now it is obvious that time cannot be taken for this task during an engagement, and so it must be done before the rifle is to be used. As the cartridges come from the factory they are perfectly clean; but if they are carried about for days and weeks in the carriers on the equipment they get very dirty. Officers must inspect them from time to time and see that damaged ones are sent away and not allowed to be fired through the rifles. No care can be too great. It is a pitiful sight to see a man in action with a rifle that has become clogged through carelessness. It is a good thing to give rewards for those who consistently present clean rifles for inspection, and to punish those who do not. When a man realises how much he is dependent on his rifle he will be certain to take care of it.

The next thing is the bayonet. I have said that all infantry work leads up to the use of the bayonet, and so, if a man is to be ready for this final test, his bayonet must be in good shape. Of course there is not much to get out of order, but there are a few movable parts that must be kept oiled, and the blade itself which must be kept clean. It is a slight courtesy that

you can pay your enemy, that you give him clean, instead of rusty, steel.

Another weapon that has proved itself indispensable in this war is the entrenching tool. It is a small instrument with a detachable handle, and the head itself has a shovel at one end and a pick at the other. It is a wonderful little tool for hasty entrenching and no attack should be made without it. It has been the means of saving many, many lives in this war.

Unfortunately, the perfidy of the enemy has made necessary another addition to the equipment of every soldier, and that is the gas mask. The best kind consists of heavy khaki cloth, kept wet with a solution to counteract and neutralise the chlorine in the gas, and equipped with goggles very much like what motorists wear, and a tube that enters the mouth. The air to be breathed is drawn in through the cloth itself, and the air that has been used is driven out through the tube. It is not a comfortable process but it is considerably better than imbibing deadly gas.

Of course a water bottle must be carried and must always be kept clean. On every possible occasion the soldier should wash it out with hot water and some form of disinfectant. Men should be discouraged from rushing to their wa-

ter bottles for drinks at all times, especially when they are on the march. Thirst is a thing that we can easily control if we will.

We learnt that it was an excellent practice to to have strapped about the equipment in a place where they could easily be got at, two sandbags. They are not heavy or bulky to carry, and if hasty cover is needed they will be found invaluable.

Lists of the clothes necessary are given in every military manual, and it will be well to follow the one for the special army to which you belong. Besides, the clothing necessary will vary according to the climate in which the troops have to serve. Quite obviously the equipment for the Philippines will be different from the equipment for France. But we found that it was a good plan to have warm underclothes for the winter, not the heaviest variety, but reasonably heavy. It is better and more convenient to add to the clothing should occasion warrant it rather than carry heavy underclothes all the time. In summer the underclothing should be light. But whatever the season, a change should be carried in the pack on the back. In the case of socks two or three emergency pairs should be in the pack. These socks should be made of wool, preferably un-

dyed, and should be thick and heavy for all times. I am aware that it is much nicer to have thin silk socks for the summer time, but they are not intended for marching in nor yet for use with heavy military boots.

Two pairs of boots should be taken, one pair on the feet and one pair in the pack. Tennis shoes should also be carried to put on at times to rest the feet.

I need scarcely indicate what toilet articles are needed, for they are the same on service as would be taken for a week-end at the seaside. But I would add that it is a good thing to include a cake of strong carbolic soap to discourage the lice.

Emergency bandages, sewn into the tunic, may be the means of saving your life.

Some means must be adopted for protecting the ears from the noises of the rifles and bombs and shells. Cotton wool will serve, but a much better device is on the market, called "Ear Defenders." They are small vulcanite cylinders that are inserted into the ears. Near the end of the cylinder there is a diaphragm of fine gauze which is pushed up against the wall by the sound waves created by great noises (thus protecting the drum of the ear) while they do not respond at all to the waves from small sounds.

Consequently it is quite possible to hear the words of a person speaking, and not be affected by the noise of the guns. I have used them myself and can vouch for their efficacy, though it does take a little time to become used to them.

Then again nearly every soldier will need a wrist watch. These should be luminous, for there is much waste of time involved in striking a match or going to a lamp to see the time. It pays to buy a good watch, and by all means get a removable cover for the glass face, for glasses easily break, and it is difficult to get them repaired on service.

I do not intend this list to be exhaustive, but to contain the most important things that a soldier will need to include in this equipment.

Officers are allowed more baggage, and will need more, but the mistake must not be made of overloading or taking unnecessary things. They will need a canvas valise and a sleeping bag to go with it, and, if possible, a very light mattress, weighing not more than a few pounds. A canvas water bucket and a wash basin, and a change of uniform are very necessary. As to weapons, I found that the Colt automatic was very serviceable. Swords are of course not carried in France. They are a nuisance for most purposes, though they do make excellent toast-

ing forks. In action we led our men, equipped only with revolver and cane. In raids and trench work a handy instrument is the trench dagger—a knife of about nine inches long, ending in a handle that has openings for the four fingers to go through, thus serving as a "knuckle duster." Field glasses are essential and indeed they should be supplied to some of the non-commissioned officers as well. Nothing under four nor over eight diameters should be chosen. Below that figure they do not magnify enough, and above that figure they magnify too much. Six or seven is ideal for the infantryman.

Some form of collapsible periscope may be carried, but most of us discarded the ones we had bought in England in favour of the simple ones that I have described in another place.

I would utter again the warning against loading up with too many things. Get few things but get good ones and keep them good is the best advice that I can give.

CHAPTER XIII

TRICKS FOR THE TRENCHES

A CLOSING word should be said on the subject of trench ruses. As in every other form of warfare, deception must be practised on the enemy. He must be made to believe you are doing things that you are not doing and that you propose doing things that are not in your plans at all. Any number of these ruses will occur to the minds of my readers, and I want to mention a few of them that we actually tried.

One of the best ruses is to let the enemy get hold of fake orders. These can be placed on bodies immediately after an action and there will be a good chance of the enemy accepting them as genuine. We have reason to believe that some of the prisoners that we took came over for the purpose of letting false orders fall into our hands. It is pretty hard on the individual to make him the goat in this way and I do not recommend it.

Making elaborate preparations for an attack

in one spot, and then actually attacking from another point when his reserves have been drawn to the first point, also used to work well.

It is well to learn the calls and signals of the enemy for use during an attack, and thus to throw his men into disorder. There have been Germans in this war who carried out the daring ruse of appearing in our lines in the uniforms of staff officers and giving orders to our men. They were brave individuals and scarcely seem to merit the swift punishment that came to them on detection.

In the trenches it was sometimes necessary to move about the few men that we had and to keep them firing first in one place and then in another to convey the impression that we were in considerable force.

Ruses had to be adopted to discover snipers. On one occasion I needed to find a sniper who had just killed three of my men, and was such an excellent shot that he broke my periscope. For this purpose I made a dummy man out of sand bags and had a soldier put him cautiously above the parapet (head only) while I observed from a neighbouring bay. I detected him from the dust that his bullet raised from his parapet, and a few well aimed artillery shots put him

and his loop hole out of business. My poor dummy was badly wounded in the process.

The Turks in Gallipoli used to paint some of their snipers a green colour and send them out between the lines among the small bushes.

A pretended retreat will sometimes lure the enemy from his trenches to destruction.

Sending out patrols in one section to draw fire while careful reconnaissance work is being done at another spot will sometimes find him off his guard.

Dummy guns, of course, have played a large part, and have been responsible for the waste of a great deal of ammunition. They are placed where they can be observed by the aeroplanes, who promptly report their presence. It is said that at the Dardanelles the forts once opened fire on the battleship *Queen Elizabeth.* After a while they sank her—and her guns floated off! It is telling no secret now to say that many of the units in the British navy had duplicates constructed out of old vessels. Their business was to draw fire to themselves while other craft did the work. Hence the wooden guns. They served another purpose as well, for it was very difficult for spies to inform Germany where the real fighting ships were at any time.

In short, the whole business is to "get the enemy's goat." Keep him guessing. Wear him down with worrying. Break his nerve and spoil his sleep, that his physical resistance may be weakened. On the other hand, learn to estimate the intention on the enemy. Do not underrate him. In all cases and under all circumstances follow out the excellent motto of the Boy Scouts—

BE PREPARED.

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